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ABSTRACT

This research project, which was originally mounted in five countries--Indonesia, Malaysia, Singapore, Thailand, and Vietnam--is concerned with four key questions. They are: (1) What are the social and economic forces that contribute to the rapid expansion of universities in Thailand, Malaysia, Indonesia, and Singapore? (2) What are the monetary and nonmonetary costs and benefits of this expansion? (3) Is this expansion warranted by or necessary for economic growth? (4) If the expansion is unwarranted, what steps can government and universities take to reduce the pressures for expansion, while still supplying vital skills needed for development? (Author/LBH)

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HIGHER EDUCATION AND ECONOMIC GROWTH IN SOUTHEAST ASIA

Edited by

Amnuay Tapingkae

Authors

Pang Eng Fong
Riaz Hassan
Niphon Kantasewi

Regional Institute of Higher Education and Development
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1976

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CSSDI Building
Heng Mui Keng Terrace
Singapore 5

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CONTENTS

Foreword vii

Introduction ix

Higher Education and Economic Growth in Malaysia and Singapore 1

I. Introduction 3
II. Economic Development of Malaysia 1950 — 1970 6
III. Economic Development of Singapore 1960 — 1972 8
IV. Historical Background of Higher Education in Malaysia 10
V. Historical Background of Higher Education in Singapore 13
VI. Higher Education and Development 20
VII. The Malaysian Experience 23
VIII. Conclusion 30

Higher Education and Economic Growth in Thailand 57

I. Historical Background 59
II. Determinants of University Growth 65
III. The Effects of the Growth of Higher Education 69
IV. Toward a More Relevant Development of Higher Education 81

FOREWORD

In view of the rapid expansion of institutions of higher education in all countries of the Southeast Asian region, the Regional Institute of Higher Education and Development convened in December 1973, at Chiengmai University, Thailand, a regional conference on "The Growth of Southeast Asian Universities: Expansion versus Consolidation" in order to take stock of the causes and consequences of higher education expansion in the region as well as to consider consolidation as an alternative. As a follow-up of that regional conference, RIHED received a research grant from Unesco to undertake a research study on Higher Education and Economic Growth in Southeast Asia.

This research study was mounted in five of the seven member countries of RIHED, namely, Indonesia, Malaysia, Singapore, Thailand and South Vietnam. However, because of recent developments in the Indo-China countries, the country study in South Vietnam has had to be indefinitely delayed. The country study in Indonesia has not yet been completed. Therefore, in this volume, only three country studies are presented, namely those of Malaysia, Singapore and Thailand.

On behalf of the Regional Institute of Higher Education and Development, I would like to express our sincere gratitude of Unesco for its research grant. I would also like to take this opportunity to thank Dr. Riaz Hassan of the University of Singapore and Dr. Pang Eng Fong of the Economic Research Centre, Singapore, for carrying out the country studies in Malaysia and Singapore, and Dr. Niphon Kantasewi of Kasetsart University, Bangkok, for undertaking the country study in Thailand.

It is hoped that this research study will be helpful to scholars and administrators and government officials in the countries of Southeast Asia. It is one of the purposes of RIHED to make research findings available for sharing among Southeast Asian countries to foster closer cooperation and better understanding of the relationship between higher education and development, not only in individual countries but also in the region as a whole.

Amnuay Tapingkae
Director, RIHED

January 1976

INTRODUCTION

In the late fifties, research in the developed countries suggested that the materialist conception of economic growth may not be altogether unassailable; income growth, it was discovered, could not be fully explained by increases in physical capital and labour. There was a puzzling 'residual' that demanded explanation. However, instead of being explained, the 'residual' became quickly associated with, and even identified as, education. This development accorded to education a new dimension and significance. As a result, a new perspective emerged in which high-level manpower came to be viewed as a key ingredient in the push for development. Higher Education was assigned the strategic task of producing the required high-level talents. A chief consequence of this policy assumption was a rapid expansion of education, particularly tertiary education, in most of the underdeveloped world. In Southeast Asia, it is estimated that university enrolments more than doubled in the sixties while expenditures increased even more rapidly. However, educational expansion has not been accompanied or followed by income or employment growth in most of the countries. The average educational level of the unemployed appears to be rising, suggesting that educational expenditures may be more consumption of scarce resources than investment in human resources.

Failure breeds critics. Some argue that universities have failed to produce the requisite skills for the labour market by pointing to the predominance of arts and humanities graduates in university output, and to the differential employment patterns between arts and technically-oriented graduates. Further, they point out that those who do find jobs are frequently not working in occupations related or relevant to their education and training. Others argue that demand for university places has been increasing because of heavy state subsidization which leads to a divergence between private and social rates of return. The first set of critics recommends a restructuring of university education, while the second advocates a greater sharing of total resource costs by students. The first recommendation assumes that the university is the appropriate place to generate market skills and presumes some ability on the part of universities to predict future skill requirements. The second is predicated on an economic diagnosis of the demand for university education.

Before the relevance and implications of these policy proposals can be examined in the context of Southeast Asian universities, a detailed picture of the relationship between expansion in higher education and economic development needs to be developed. A knowledge of the determinants and consequences of university expansion therefore is required. We need to understand, for instance, the political imperatives that compel the growth of university systems, as well as the nature of private demand for higher education. We will have to assess also the labour market performance of university graduates and the roles they have played in promoting economic growth and transformation. For example, how does their experience compare with that of secondary school leavers and those who failed to get admission into college? If there is graduates unemployment, what are the underlying causes? Is it because graduates refuse to adjust their occupational aspirations to the realities of the job market? And if they do adjust, does this mean they are engaged in jobs beneath their qualifications and hence underemployed? Further, if graduate unemployment and underemployment are rising, why is there no reduction in the private demand for higher education? Is the divergence hypothesis put forward by Edwards and Todaro in their paper on educational supply in the context of growing unemployment in less developed countries the explanation

for the excess supply of graduates? If so, what are the feasible policy instruments that can be manipulated to stem the private demand for higher education?

In short this research study is concerned with four key questions: (a) What are the social and economic forces that contribute to the rapid expansion of universities in Thailand, Malaysia, Indonesia and Singapore? (b) What are the monetary and non-monetary costs and benefits of this expansion? (c) Is this expansion warranted by or necessary for economic growth? (d) If the expansion is "unwarranted", what steps can government and universities take to reduce the pressures for expansion, whilst at the same time supplying vital skills needed for development?

Country Outline

I. Historical Background

1.1. Brief description of history and growth of higher education and its relationship to other kinds and types of education.

1.2 Brief outline of economic development since 1950.

II. Determinants of University Growth

2.1 Factors from both within and without the university system: economic, social, and political.

2.2 Other factors.

III. Effects of the Growth of Higher Education

3.1 Impact on the nature and quality of higher education: changes in enrolments, tuition and fees, staff, administration, cost per student and share of private burden of total resource costs.

3.2 Increase in supply of graduates.

3.3 Changes in the character of graduate employment (and/or unemployment, underemployment and misemployment).

3.4 Impact on the society at large.

3.5 Relationship between investment in higher education and the country's economic growth from 1950.

IV. Towards a More Relevant Development of Higher Education

4.1 Higher education in the context of the educational system.

4.2 Higher education in the nation's economic and social development planning and plans.

4.3 Conclusions and recommendations.

Research Organization

Originally, this research study was to be mounted in five of the seven member countries of RIHED, namely, Indonesia, Malaysia, Singapore, Thailand and South Vietnam. However, because of recent developments in the Indo-China countries, the country study in South Vietnam has had to be indefinitely delayed. In addition, the country study in Indonesia has yet to be submitted by the researcher responsible for this study.

RIHED

January 1976

HIGHER EDUCATION AND ECONOMIC GROWTH IN MALAYSIA AND SINGAPORE

by

Pang Eng Fong & Riaz Hassan*

I INTRODUCTION

In the late fifties, research in the developed countries suggested that economic growth could not be fully explained by increases in physical capital and labour. There was a puzzling 'residual' that demanded explanation. However, instead of being explained, the 'residual' became quickly associated with, and even identified as, education.

Using the so-called 'residual approach', Solow suggested that close to 90% of the United States growth between 1929 and 1955 may be attributed to technical progress, which in part reflects the effects of increased education of the labour forces.[1] In 1962, Denison, in another study, estimated that increased education per worker accounted for 23% of the economic growth of the United States between 1929 and 1957.[2]

The identification of the 'residual' element with education received further support from international comparison studies. Harbison and Myers, for example, found a close correlation between their composite index of human resources (essentially a weighted index of educational enrolments) and per capita income.[3] The major problem with their study, as with others involving international comparisons of education and development, is that it contains no theory to explain how a high level of educational attainment in the workforce or population leads to a high level of per capita income. It is not clear if a country is rich because its people are well-educated or if its people are well-educated because it can afford to spend more on education. Even if a causal connection between educational investment and development can be established — an unlikely event — the time interval would still need to be determined. Thus a rapid expansion of higher education may yield dividends only one or two decades after the expansion. Furthermore, it is not realistic to expect that such studies can furnish universal guidelines for the optimal development of educational systems because of the large variations in political and social systems.[4]

Nonetheless, these studies made a tremendous impact on policy-makers in the developing countries (LDCs), burdened with the heavy task of economic growth and a burgeoning labour force. Education acquired a new dimension and significance; particularly higher education, to which was assigned the strategic task of producing the high-level manpower deemed necessary for economic development.

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*Dr. Pang Eng Fong is Director of Economic Research Centre, University of Singapore and Dr. Riaz Hassan is Senior Lecturer of Department of Sociology, University of Singapore.

[1]See R.M. Solow, "Technical Change and the Aggregate Production Function", *Review of Economics and Statistics*, August 1957.

[2]E.F. Denison, *The Sources of Economic Growth in the U.S. and the Alternatives Before Us*, New York, 1962.

[3]F. Harbison and C.A. Myers, *Education, Manpower and Economic growth*, New York, 1964.

[4]For a cogent critique of the Harbison-Myers study and others on the contribution of education to economic growth, see Mark Blaug, *An Introduction to the Economics of Education*, Penguin, 1972.

This view, as practised in educational planning in the LDCs, incorporated a specific theory of development and education. Development was seen in the light of a dual-sector model, which postulated that the modern (industrial) sector had to be expanded at the expense of the traditional (agricultural) sector if development was to occur. A modern sector requires more highly skilled personnel, hence the importance of tertiary education. Furthermore, education was defined narrowly as essentially formal education. Thus, skilled manpower could only be developed through the graded school system.

Coupled with the strong ideological belief that every individual has the right to develop his innate potentialities as fully as possible through educational channels, the new perspective on education led to a rapid expansion of educational systems in the LDCs, especially at the tertiary level. In Southeast Asia, university enrolments more than doubled in the sixties while expenditures rose even more rapidly.

India and Ceylon led the way in tertiary expansion but by the late sixties, it had become evident that what they had wrought was not economic development but widespread graduate unemployment.[5] What had happened was that a large number of university graduates who could not find jobs "suitable" to their level of training had been graduated at great cost, and were beginning to pose a political threat to the society.

The phenomenon is reminiscent of what sociologists have termed "pseudo-urbanization" in the Third World. In the developed nations, urbanization proceeded alongside industrialization. In the Third World however, rapid urbanization was due probably more to "push" factors from the countryside than the "pull" of industrialization in the urban centre. As a result, the swollen cities became

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[5]Higher education in economically underdeveloped countries, in fact, has become a substitute for employment. As the paradigm below indicates, the features of underdevelopment produce conditions which are conducive to the expansion of higher education.

Variable	Underdeveloped Society	Developed Society
Population Growth	High	Low
Age Structure	Large concentration in younger age categories	Normal
Rate of Expansion of Secondary Education	High	Low
Rate of Economic Growth	Low	High
Higher Education/ University Expansion	High	Low

dependent on the surrounding countryside and became drains on resources rather than the focal points of development.

Where tertiary education developed with little regard for the needs of the economy, a similar phenomenon occurs. But how could this have occurred if education was seen as an investment for economic growth? One popular and appealing explanation is that universities have failed to generate the requisite skills for development because they produce the wrong product mix — i.e. too many arts graduates, and too few engineering and professional graduates. However, the explanation is incomplete; it does not explain why presumably rational individuals would continue to enrol in large numbers in courses for which there seems to be little market demand.

The answer to this puzzle lies in the financing and supply of higher education. Most states heavily subsidize higher education, and given the relatively high graduate earnings prevailing in most Southeast Asian countries, the result is a large divergence between individual and societal returns to education. In other words, the development needs of the economy and the socio-economic incentive structure for the individual do not correspond. Even this is only a partial answer. Another plausible explanation, as suggested above, is that higher education in economically underdeveloped countries with large young populations tends to become a substitute for employment. As the demand for higher education under these circumstances increases, the expansion in the higher education opportunities follows. The expansion tends to take place more rapidly in the Arts as it is cheaper and easier to provide than in the more costly professional subjects.

At this point, we should note the distinction between the teaching and selection functions of formal education. The view of education as an investment in human resources involves a recognition only of the teaching function; it sees the educational system essentially as the transmitter of skills. But the formal educational system also has a selection function, i.e. through its issuance of certificates (presumably, a testimony to the acquisition of certain abilities), it entitles and allocates people to positions in society which are denied to non-holders of these certificates. The system can thus act as a rationing mechanism.

In Third World countries, the selection function of higher education has become increasingly important. The effects are pernicious. The process works thus: with scarce jobs, certification (regardless of skills) is the only avenue to job opportunities. Schools are the only institutions which grant certificates. As the private costs of higher education are low in terms of the anticipated private returns, a high demand for tertiary education is generated, even discounting a lengthy wait for employment. Graduate unemployment persists but demand for higher education does not fall; entry qualification levels for jobs are further raised, thus stimulating an even higher level of demand for tertiary education.

In brief, it is argued that there is no firm, determinate relationship between the expansion of the educational system and development. The demands on the educational system depend on the stage and nature of the individual country's socio-economic structure.

The socialization effect of higher education should also be noted. The educational system serves to inculcate values and to change attitudes in a direction favourable to social and economic development. Where universities exist in

multi-racial societies, they may act as preservers and creators of national cultures, and they may imbue young people from disparate backgrounds with a set of common values and a sense of national purpose.

Additionally, the teaching and selection functions of the university are important in maintaining or changing the existing system of social stratification. Universities are an instrument for promoting social mobility, a role of increasing importance as many LDCs have begun to redefine their development goals to include considerations of equity. Universities are called upon to redress unequal access to opportunities in the socio-economic system.

In the following section, we shall examine the nature of tertiary education expansion in Singapore and Malaysia in the light of the above discussion.

II ECONOMIC DEVELOPMENT OF MALAYSIA 1950-1970

Performance

In 1970, Malaysia had a per capita GNP of US$380 which, in relation to the ASEAN countries, ranked second after Singapore. From 1950 to 1960, the growth rates were subjected to great fluctuations, with three periods of remarkably high growth punctuating otherwise moderate performances. In 1950, the economy witnessed a 60.8% growth rate; in 1955, 27.4% and in 1959, 15.1%. In the sixties, growth was rather more modulated, with an average growth rate of 5.7% for 1960-1965 and 6.2% for 1966-1970. The average rate of growth of GDP from 1958-1971 was 6.3%.

Economy – Structural Changes

The fluctuations of the growth rate in the fifties reflected Malaysia's dependence on an export sector dominated by rubber and tin. This pattern was set by the colonial administration, whose main interest in Malaya from 1874 to 1957 lay in the exploitation of her raw materials for industrial development in the metropolitan centres of Great Britain.

The First Five-Year Plan for 1956-1960 gave first priority to agriculture and rural development. In 1958, a definite decision towards diversifying the economy was taken when the Pioneer Industry Policy was adopted. The need to diversify the economy was obvious: Malaysia's dependence on rubber and tin, both of whose prices fluctuated constantly, was detrimental to the long-term growth and stability of the economy.

In 1967 shortly after the First Malaysia Plan had gone into operation, agriculture contributed just over 33% to GDP at factor cost and 57.3% of total exports. Mining contributed nearly 7% to GDP but 27.7% of total exports. Manufacturing accounted for less than 11% of GDP and 13.7% of exports. The structure of the economy had thus remained largely unchanged since independence in 1957 and growth had occurred primarily through improvement in productivity and export prices.

At the beginning of the Second Malaysia Plan in 1971, the situation had not changed substantially. Although the manufacturing sector had the highest average annual rate of growth of slightly over 10% among all sectors during the period 1967

to 1971, and its share of GDP rose from 11% to 13%, its share of export earnings fell from 13.7% to 11.8%. The relative contribution of all the other sectors remained fairly stable with agriculture and services continuing to be the largest sectors in the economy. Throughout the years since independence, therefore, there has been very little transformation of Malaysia's economy.

It is interesting to note that an estimated 71% of this growth was attributable to the growth of capital stock, 18% to growth of labour input and 11% to residual factors.[6] These factors include improved capacity utilization, education, organization and technology and in Malaysia's case, much of it may well be due to improvements in productivity in the rice and rubber sectors.

Employment

Agriculture absorbs the largest proportion of the workforce in Malaysia. However, between 1947 to 1970, there have been substantial changes in the sectoral composition of employment.[7] Agricultural absorption of labour declined from 65.1% in 1947 to 49.4% in 1970 while the services sector increased its share from 23.2% to 35.7% and the manufacturing sector from 7.1 to 9.2%.

The late sixties witnessed an increase in unemployment, especially in the urban areas (partly because of rural-urban migration). Urban unemployment reached a peak of 12.7% in 1969. At the start of the Second Malaysia Plan in 1971, the general unemployment rate was estimated at 7.5%, most of it concentrated among urban adolescents. Employment generation is one of the biggest challenges facing the Malaysian economy in the seventies.

Social Structure and Development Planning

Any coverage of the Malaysian economy would be inadequate without mention of the existing socio-economic disparities among the main ethnic groups in Malaysia, and the avowed aim of the Second Malaysia Plan to restructure the society and economy.

Up to 1970, the thrust of the development plans was directed at development defined in economic terms. While this had been relatively successful, the net result of 20 years of development planning in Malaysia has been the accentuation of racial and class differences. In 1957, the Malay income per head was half that of the Indians and only a little over 40% of that of the Chinese. In 1967, the situation remained substantially the same. A third of the employed Malay speakers earned a monthly income of $75 or less; among Chinese-speakers, the corresponding proportion was only 10% and among the English-speaking group, 6%.[8] Ownership of capital in the hands of nationals was 60% Chinese, 4% Malay and 2% Indian,[9] and 34% others. As Malays accounted for 50.4% of the population, Chinese 36.4% and the Indians 11%, the unequal distribution of wealth is clear. Occupations were also highly stratified by race, with the Chinese dominating private industrial and com-

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[5] V.V. Bhanoji Rao: *The Postwar Development Pattern and Policy of the Malaysian Economy*, unpublished Ph.D. dissertation submitted to the University of Singapore 1974, p. 60.

[6] *Ibid.*, p. 106.

[7] J.P. Aries, "Ethnic and Socio-Economic Patterns in Malaysia", *International Labour Review*, 104, 6, June 1971.

[8] Second Malaysia Plan 1971-1975 Kuala Lumpur, Government Press, 1971.

mercial employment, and the Malays in small-holding agriculture and in the civil service.

In May 1969, racial riots broke out; the government attributed them largely to resentment against the existing inequities in income and opportunities. With this in the background, the Second Malaysia Plan inaugurated a new economic policy which gave precedence to equity and racial economic balance. Two objectives will guide development efforts in future: the eradication of poverty through rapid economic growth, and the restructuring of society to reduce and eventually eliminate the identification of race with economic function. The Mid-term Review of the Plan estimated that an average annual growth rate of 7% over the next 20 years would be adequate to achieve both.

The strategy for development is also twofold: the modernization of agriculture and the establishment of industrialization. It is in the light of these objectives and strategies that the nation's educational policies must be seen.

III ECONOMIC DEVELOPMENT OF SINGAPORE 1960-1972

During the period 1960-1972, the Singapore economy achieved an average annual GDP growth rate of 11.2%. In terms of per capita GDP, the average annual rate of growth was 8.8%, rising from $1,243 in 1960 to $3,410 in 1972, the second highest in Asia after Japan. The sustained nature of the growth was due primarily to the rapid industrialization of the economy.

Economy – Structural Changes

Although the services sector contributed 66.2% to GDP in 1972, it was a dramatic fall from the 82.7% in 1960. Within the services sector, the fastest growing division was the tourism industry which grew by 23.3% every year. Entrepot trade however, traditionally one of the mainstays of the economy, grew by only 5.1% during the same period.

Manufacturing and quarrying on the other hand, increased by 20.3% and construction by 24%. By 1973 there were almost 2,000 manufacturing establishments in Singapore with an output of $5,845 million. Although Singapore's industrial pattern is becoming increasingly diversified, in 1972, it was dominated by five major categories of manufacturing activity, which include petroleum refining, the manufacturing of machinery, textiles and electrical and electronic products.

In the first half of the decade, Singapore followed an import-substitution policy but after 1965, the policy was superseded by an export-oriented, labour-intensive policy, designed to solve Singapore's unemployment problem and overcome the loss of a common market when she separated from Malaysia. The successful transformation of her economic base was the essence of Singapore's development decade.[10]

Employment

What is even more remarkable about Singapore's economic growth was that it

[10]For a fuller account of the transformation, see Lee Soo Ann, *Industrialization in Singapore*, Longmans, 1974.

generated sufficient new employment to transform a situation of almost massive unemployment in the early sixties to full employment in 1972. An estimated 60,000 non-citizens are reported to be working in Singapore.

The largest employer by sector is the manufacturing sector which accounted for 33.5% of total employment in 1972. Next came services, with 25.5%, followed by commerce, with 22.3%.[11]

Development Strategy

Right from the time it assumed power in 1959, the PAP government had recognised that industrialization was crucial for the economy. To that end a Development Plan, covering the period from 1961 to 1964, was drawn up. The Plan looked to economic growth in a free-enterprise system but with the active direction and participation of the government and this formula, established in 1961, has guided Singapore's development strategy ever since.

The Economic Development Board was set up to mastermind the industrialization strategy, which in the first few years stressed import-substitution to take advantage of the Malaysian market following Singapore's entry into Malaysia in 1963. After 1965 however, and the loss of a common market with Malaysia, selling to the world became the only means of economic survival and a new export-oriented strategy was devised. Foreign investment became crucial to the success of this new strategy, both for its capital, technical know-how and for its ability to compete effectively in world markets. Infrastructure development was pursued vigorously and a whole new industrial town was established in Jurong. The government moved vigorously to promote a peaceful industrial climate. In 1968, labour laws were passed which substantially reduced trade union powers vis-a-vis management. The educational system was also revamped to place more emphasis on the production of the skilled personnel required by a modern, industrial economy

By 1972, it was evident that all the planning and hard work had paid off. In the words of two foreign commentators[12] "lacking a rural hinterland with the safety valve of a still functioning agrarian subsistence economy and the reserve of undeveloped natural resources, Singapore's people had nothing to fall back upon but their own energy, adaptability, intelligence and realism". All this was set to work for the achievement of one over-riding goal — rapid economic growth.

Strategy for the Seventies

The sixties witnessed in rapid transition, first the relatively unsuccessful establishment of an import-substitution labour-intensive manufacturing sector and then the switch to a successful export-oriented but still labour-intensive industrial sector. By 1972 however, as signs of an incipient labour shortage appeared, it became apparent that Singapore's economic growth could only be sustained if further structural changes were made. In his 1972 Budget Speech, the Finance Minister, Mr. Hon Sui Sen revealed that the 70's were to be devoted to transforming Singapore into a regional centre for brain services and brain service industries. As

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[11] Theodore Geiger and Frances Geiger, *Tale of Two City-States: The Development Progress of Hong Kong and Singapore*, Washington: National Planning Association, 1973, p. 174.

[12] Geiger and Geiger, *op. cit.*, p. 165.

part of this programme, the industrial sector would shift away from labour-intensive techniques to capital-intensive, high-technology firms.

IV HISTORICAL BACKGROUND OF HIGHER EDUCATION IN MALAYSIA

At present Malaysia has five universities and three colleges and institutes offering post-seondary higher education. The oldest and best-known of the universities is the University of Malaya. Since 1969, the Universiti Sains Malaysia and the Universiti Kebangsaan have been established in Penang and Kuala Lumpur respectively. The University of Agriculture (Universiti Pertanian Malaysia) and the National Institute of Technology are the more recent additions to Malaysia's tertiary institutions.

The University of Malaya began with three faculties, namely Arts, Science and Engineering. University teaching had started in Kuala Lumpur in 1957 (under the former University of Malaya) with first-year teaching in all arts subjects conducted in buildings temporarily made available in the Government Technical College. The Agriculture Faculty was added in 1960 and this was followed by the Education and Medicine Faculties in 1963.[13] A seventh faculty, Economics and Administration, was established in 1966/67 while two more, the faculties of Dentistry and Law, have been added.[14] The University of Malaya has expanded rapidly both in terms of student intake and establishment of new faculties and departments to meet with the changing needs of the country. In a way too, it has been the parent University which has assisted the establishment and growth of the other new universitites. Other institutions of higher learning include the Mara Institute of Technology, Tengku Abdul Rahman College and the Ungku Omar Polytechnic.[15]

The Universiti Sains Malaysia was previously called University Penang. The idea of setting up a university in Penang was mooted more than two decades ago, in an attempt to decentralize University education, rather than having it available only in the capital, Kuala Lumpur. In 1962, the Penang state legislature passed a resolution to enlist the help of the University of Malaya authorities, to establish a university college or institution of higher learning affiliated to that university, in Penang. Further development came when the Ministry of Education established a Higher Education Planning Committee, which *inter alia* also looked into the possibility of setting up a university in Penang. A committee appointed by the government then recommended in mid-1968 that the proposed university college be elevated to the status of a full university, free and independent of the University of Malaya.[16] A cabinet paper was subsequently submitted and approved. The intention was for the university to begin operating on 29 May 1969. However, due to the 13 May disturbances, a decision was taken to postpone matriculation day to 9 June 1969. On that day, the first 57 undergraduates were matriculated to read courses in natural sciences at the university's temporary campus at the Malayan Teachers' College Campus. By an act of parliament in early 1972, the name was changed to Universiti Sains Malaysia. Also in May 1971, the university moved to its permanent campus at Minden.

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[14]UNESCO and IAU. *Higher Education and Development in Southeast Asia, Vol. II, Country Profiles*, Paris 1967, p. 360. The Dentistry Faculty was set up in 1972/73.

[15]These are listed as tertiary institutions in Francis Wong Hoy Kee, *Comparative Studies in Southeast Asian Education*, K.L.: Heinemann Educational Books (Asia) Ltd., 1973, p. 102. This list is not exhaustive.

[16]This was recommended by a Working Committee under the chairmanship of the Minister for Education, Y.B. Inche Mohd. Khir Johari. See *Universiti Pulau Pinang, Annual Report 1969/70*, p. 2.

[3]The following table gives the student population and teaching staff of the University for the period 1959-65

Year / Faculty	1959		1960		1961		1962		1963		1964		1965	
	Student	Staff	Stud.	Staff	Stud.	Staff	Stud.	Staff	Stud.	Staff	Stud.	Staff	Stud.	Staff
Arts	163	n.a.	354	28	556	41	723	45	908	56	1188	67	1496	77
Science	31	n.a.	114	26	203	31	318	40	398	45	462	50	568	53
Engineering	129	n.a.	159	12	198	11	226	13	257	18	262	19	281	21
Agriculture	—	—	27	5	53	8	74	11	99	13	123	14	154	18
Education	—	—	—	—	—	—	—	—	34	6	88	10	150	12
Medicine	—	—	—	—	—	—	—	—	40	13	102	30	186	50
Total	323	n.a.	654	71	1010	91	1341	109	1736	151	2225	190	2835	231

Source: Lim Chong Yah, "A Brief Note on the Finances of the University of Malaya." Mimeo., n.d. Annex I.

Notes: — = Nil
n.a. = Not available
All figures refer to the end of the year except 1960 staff (end of August), 1965 staff (end of September) and 1965 student (middle of July).

This new university has seven schools, namely Biological Sciences, Chemical Sciences, Physics and Mathematics, Applied Sciences, Pharmaceutical Sciences, Social Sciences and Humanities. It also has a centre for Educational Services which provides courses in education to train graduate teachers in science and mathematics.

Universiti Kebangsaan (National University) had its first intake of 171 students on 18 May 1970 and is also sited in Kuala Lumpur. It has three faculties, arts, science and Islamic studies, and a Language Unit. In its development plans for 1971-75, the university also hopes to set up a medical faculty, a faculty of education and an institute of Malay language, literature and culture. It is also the first university using Malay as the medium of instruction, but with English as a compulsory subject. Universiti Kebangsaan thus has the unique role of demonstrating that tertiary education in Malaysia can be successfully conducted in Bahasa Malaysia. It has at present, two separate campuses, temporarily sited at the former premises of the Malayan Teachers' College in Jalan Pantai Baru, Kuala Lumpur, and the former Muslim College of Malaya and Jalan Universiti, Petaling Jaya. It will move to its new 2709 — acre site at Bangi, Selangor by 1976.

Founded in 1955, the National Institute of Technology offers degree and diploma courses in engineering (civil, electrical and mechanical), architecture, land surveying and quantity surveying.[17] The recent change in status from a college to a university was announced by the Minister for Education, Encik Hussein Onn in March 1972. The Institute will be the main supplier of the much needed high-level engineers and architects for the successful implementation of the Second Malaysia Plan, 1971-75.

The 1918 Committee on Technical and Industrial Education in the Federated Malay States, when it recommended the provision of Trade Schools, also included in its proposals a School of Agriculture. But it was not until 1931 that the Department of Agriculture opened the School of Agriculture at Serdang, offering a two-year course, principally with the object of training future officers of the department.

In 1947, it was granted college status and a year later, the diploma course was lengthened to three years. Since then, it has trained personnel for both the Department of Agriculture and the Rubber Research Institute. The college was controlled by a council which was, by statute, an agent of the University of Malaya, an arrangement which brought it into closer contact with the Faculty of Agriculture of the University. In Malaysia, given its agriculture-based economy, the idea of a higher institution to produce qualified leaders at professional and sub-professional levels in agriculture was a logical one. Thus on 28 October 1971, the college at Serdang was merged with the Faculty of Agriculture at the University of Malaya to become the University of Agriculture. Besides research into crop-production, there is also a poultry unit and a livestock farm, with facilities for agronomic research. The four faculties are those of Agriculture, Forestry, Veterinary and Medicine and Animal Science.

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[17] The earlier origins of the Technical College can be found in UNESCO and IAU *op. cit.*, p. 311 and p. 314 and also in Francis Wong Hoy Kee and Ee Tiang Hong *Education in Malaysia*, K.L.: Heinemann Educational Books Ltd., 1971, pp. 159-160.

The Mara Institute of Technology (MIT), founded in 1965, originated from the Dewan Latehan RIDA (Rural Industrial Development Authority) established in 1954 to prepare young Malays for work in commerce and industry.[18] It was originally named Maktab Mara and subsequently renamed Mara Institute of Technology in October 1967, after expansion in the number of courses and students. After the completion of its new campus at Shah Alam in 1975, its enrolment is expected to reach 4,500.

The Institute prepares students for the professional examinations of certain educational institutes in the United Kingdom. A number of its own diploma courses are also being conducted and these examinations are standardized by external examiners from Ealing College, London. The MIT is designed to play a role complementary to that of the University of Malaya and in fact conducts courses not available elsewhere in the country. It aims at meeting the needs of professional and sub-professional personnel. It offers 44 courses in ten schools which include accountancy and finance, computer science, agriculture, engineering, hotel and catering management, library science and pre-university studies.

An important contribution to the development of education is the establishment of the Tengku Abdul Rahman College in Kuala Lumpur in 1969. The brain-child of the Malaysian Chinese Association, the college, as envisaged by its sponsors, would be a half-way house between school and university. In 1970 its enrolment was 1,034 (510 in 1969) with 643 students in science and 391 in arts. Enrolment is expected to reach 4,300 by 1975 in the School of Pre-university Studies and other three projected schools of arts and sciences, technology and business studies.

Finally, the Ungku Omar Polytechnic in Ipoh opened in 1970 with 290 students enrolled for courses in civil, electrical and mechanical technologies, accountancy and business studies. The Polytechnic covers to some extent the need for second-level technicians and aims at providing a broad schedule of technical and commercial courses. Its scope includes town and country planning, mining technology, land and quantity surveying, structural, architectural and mechanical drawing.

From the above, it will be noted that all the institutions of higher learning are sited in West Malaysia. While East Malaysia has also begun to implement plans for technical and vocational education up till 1974, students seeking tertiary level education still had to come over to universities and colleges in either Singapore or West Malaysia (or go for studies in Europe and America). In 1974, MARA established a branch campus in Sabah and will soon establish another one in Sarawak. Universiti Kebangsaan is also expected to establish a branch campus in East Malaysia next year.

V HISTORICAL BACKGROUND OF HIGHER EDUCATION IN SINGAPORE

Tertiary education in Singapore began rather late and slowly, partly due to its neglect by the colonial administrators, who did not have the foresight that Sir Stam-

[18]Mara stands for Majlis Amanah Rayat or the Council for Indigenous People, see *The Mara Institute of Technology — Yesterday, Today and Tomorrow*, K.L. Government Printer, Mara Institute of Technology, 1969.

ford Raffles had.[19] An initial effort to establish a tertiary institution took place towards the close of the 19th Century, when the Straits Settlement Government set up a medical school to train local students as assistant surgeons to Europeans.[20] This school was not successful, but the idea of a full-fledged tertiary institution was taken up by the non-European trading community led by Tan Jiak Kim; a total of $80,000 was raised and the local merchants petitioned the colonial government to establish a medical school.[21]

The project was reluctantly agreed to and the Straits Settlements and Federated Malay States Medical School was opened in 1905 "in discarded buildings which had previously formed part of the female lunatic asylum", with an entry of 23 students.[22] A five-year training course was given and the licence in medicine and surgery was awarded upon successful completion. In 1916, the licence was recognized by the General Medical Council of the United Kingdom. In 1925, the school was renamed King Edward VII College of Medicine and by 1935, full courses in dentistry and pharmacy, as well as in medicine were given.[23] By 1947 there was a total enrolment of 265, including 41 women, and 11 chairs (though six of these were vacant).[24]

Following the centennial celebrations of the founding of Singapore, steps were initiated to set up a parallel college to teach arts and science. In 1928, Raffles College was opened with staff recruited from U.K. and supported by public subscription and government grant.[25] At the beginning, the new college was bedevilled by insufficient funds, inadequate control (exercised for a number of years ex-officio by a Director of Education more than fully occupied with primary and secondary education), and a general suspicion that it was merely a teacher-training institution. But many of the difficulties were overcome, and by 1974 student enrolment had risen to 300 (compared to 80 in 1934/35) and a three-year diploma course was being held in art of science, the latter also covering the pre-medical requirements of the College of Medicine. Raffles College was a private institution with strong government representation on its council,[26] while the College of Medicine was a full responsibility of the government. The scope of employment for the graduands was expanded in 1933, when the colonial government created the Straits Settlements Civil Service to enable Raffles College diploma holders to fill the junior administrative posts in the bureaucracy.

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[19] "Sir Stamford Raffles, in a minute written shortly before he left Singapore declared that . . . education must keep pace with commerce in order that its benefits may be assured and its evils avoided . . . shall we not consider it one of our first duties to afford the means of education to surrounding countries and thus render our stations not only the seats of commerce but of literature and the arts? This minute is quoted in full in Lady Sophia Raffles *Memoir of the Life and Public Services of Sir Thomas Raffles F R S etc.* (London, 1830). Also quoted in *Raffles of the Eastern Isles*, Wurtzburg, ed. Witling (London, Hodder and Stoughton, 1954)

[20] See K. Kanagaratnam "The Early Years of the Medical School", *Sixty Years of Medical Education*, (Singapore, n.p. 1965), p. 20

[21] G. Brooke "Medical Works and Institutions" in W. Makepeace *et al.*, *One Hundred Years of Singapore*, (London: John Murray, 1921), Vol. 1, p. 514

[22] Department of Education, *Annual Report 1950*, p. 11

[23] UNESCO and IAU *Higher Education and Development in Southeast Asia, Vol. II, Country Profiles*, (1967), p. 433

[24] *Ibid*., p. 433

[25] *Ibid*., p. 434

[26] See *Raffles College Calender*, for details

In 1939, a commission under Sir William McLean recommended the integration of the two institutions into a university college with an English affiliation as the first step in establishing a University of Malaya.[27] No progress was made in implementing the recommendation due to the outbreak of the Second World War. In 1947, a second commission under Sir Alexander Carr-Saunders considered that the standards of both institutions warranted the status of a full university.[28] The commission also shared the general view that the federation of Singapore with Malaysia was bound to be effected in the near future, and hence proposed that the amalgamation be effected in Johore Bahru, presumably a convenient mid-way point between Singapore and Kuala Lumpur. The merger was rapidly effected on 8 October 1949, and it was decided not to resite the university.[29] The first convocation took place in 1950, with a student body of 781.

The University of Malaya was sponsored and financed jointly by the governments of the Federation of Malaya and of Singapore, but it enjoyed a considerable degree of autonomy, with its own court and council constituted as statutory bodies, under the laws of the two territories. It had three faculties of Arts, Science and Medicine and admission (either overseas or local) was based on a higher school certificate. The table below gives the distribution of students in 1957.

TABLE 1

University of Malaya, Singapore: Distribution of Students in 1957

Territory	No.	%	Sex	No.
Federation of Malaya	1134	62	Male	1401
Singapore	622	34	Female	424
Sarawak & North Borneo	25	1		
Other	44	3		
Total	1825	100		1825

Course of Study	Total No.	No. for S'pore	Race	
Arts	844	306	Chinese	1145
Law	42	22	Malay	228
Science	227	69	Indian	229
Engineering	92	32	Ceylonese	140
Medicine	493	162	Eurasian	47
Dentistry	109	26	Other	36
Pharmacy	18	5		
Total	1825	622	Total	1825

Source: *Educational Triennal Survey*, 1955-57

[27] *Report of the Commission on Higher Education in Malaya*, London, HMSO, 1939
[28] *Report of the Commission on University Education in Malaya*, K.L., Government Printer, 1948
[29] *Annual Report, 1949-50*, p. 1

While the attempt to move the University of Singapore to Johore Bahru was aborted, the clamour for a separate university to be set up in Malaya continued to gain widespread sympathy and support in that territory.[30]

In 1957 a commission chaired by Dr. Robert Aitken was appointed to "review the constitution, working and finances of the University of Malaya in the light of the experience and rapid expansion of the last seven years and of the prospective expansion in the near future, including the plan for developing the university in Kuala Lumpur".[31] In the matter of expansion into Malaya, two solutions were put forth; (a) establishment of a K.L. "division" of the university, with teaching departments, for which the Government of Malaya would accept financial responsibility, and (b) establishment of a university college at Kuala Lumpur, offering degree courses approved by the Singapore senate. The commission opted for the second scheme. In the event, however, neither scheme as formulated was acceptable to the two committees appointed by their respective governments to examine the report, and a third, and obviously interim, policy was followed.

In 1958 then, legislation was enacted to provide for the development of the university to be effected by the creation of two largely autonomous divisions of equal status, the original institution in Singapore and a new division in Kuala Lumpur. Each division had a principal divisional council and a divisional senate, and co-ordination was effected by a single vice-chancellor and a central council with equal representation from each of the two divisional councils. But it was a matter of time before the split into two autonomous universities began. This finally materialized on 1 January 1962 when the Singapore division came to be known as the University of Singapore while the K.L. division retained the name of the University of Malaya. A new vice-chancellor was appointed to head the University of Singapore as the incumbent of the former University of Malaya remained in Kuala Lumpur.

The University of Singapore in 1962 had four faculties — Arts, Science, Medicine (including Dentistry and Pharmacy) and Law. It also had the School of Education and a non-faculty Department of Social Studies. All these faculties and non-faculty departments had been previously established under the University of Malaya. Since 1962, much reorganization and expansion have taken place to encourage development of the university to make it more consonant with national goals. Accordingly, new departments were established, such as those of Chinese and Malay Studies, Political Science, Sociology and so on. An Economic Research Centre was established in 1965 to "assist policy-makers in formulating plans of economic and social advancement".[32] Within the Faculty of Medicine, a School of Post-graduate Medical Studies was inaugurated in 1964 to promote postgraduate studies and to provide refresher and specialist diploma courses and other programmes leading to higher degrees. Similar extension of course work also occurred in the Faculty of Law.

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[30] The desire for a separate university for Malaya can be traced to as early as 1954. See *University Annual Report, 1953-54*, p. 2, where it is stated, "... that the University of Malaya will be maintained as an integral body, serving the Federation and Singapore, until the time for establishing two separate university institutions — one located in Singapore and one in the Federation — arrives, when the whole matter will be reviewed ..."

[31] *Report of the University of Malaya Commission of Engineering, 1957*, Singapore: Government Printer, 1957, p. 7.

[32] University of Singapore, *Annual Report, 1964-65*, p. 2.

A more recently discernible trend of development lies in the introduction of more professional courses related to the needs of a rapidly industrializing and modernizing society. Departments in applied chemistry, accountancy, business administration, social work and social administration, civil, mechanical and electrical engineering, and architecture, are all indicative of this trend. A Department of Music was the latest addition in 1973.

The University of Singapore is only one of the six institutions of higher learning in Singapore, the others being the Nanyang University (1956), the Singapore Polytechnic (1958), the Teachers' Training College (1950), the Ngee Ann Technical College (1963) and the Singapore Technical Institute.

When educational facilities in the People's Republic of China were closed to residents outside the country in the period after World War II, the Chinese community in Singapore was determined to establish its own local institution of higher learning. The need was also precipitated by the simultaneous growth of secondary schools giving a six-year course in Chinese. As a consequence a Nanyang University was planned in 1953 and began admitting students in 1956. It was founded by a limited company since the government was not prepared to grant a charter until after the usual inquiry into standards and staff of the university. The medium of instruction was Chinese and it followed broadly the Chinese (Taiwan) university system, which in turn is partly based upon the American pattern. It had three colleges then, and in 1957 there were 388 students in arts, 327 in science and 185 in commerce.

In 1959, when Singapore became self-governing, a grant was made and an ordinance was passed to incorporate the university and revise the system of control. Thus instead of a management system whereby the financiers of the institution also made staff appointments and directed educational policy, a council and senate as well as a court, were instituted. A commission under S.L. Prescott was also appointed "to look into the academic standards of Nanyang University and the adequacy of the teaching staff and equipment and the means adopted by Nanyang University for ensuring satisfactory standards of academic work."[33] The commission pointed to the inappropriate organization and administrative system; inadequate standard of library and laboratory provision; the great proportion of staff who were inadequately qualified; discouraging and demoralizing terms of employment; and overloaded and uncoordinated curriculum. It therefore felt Nanyang degrees were not comparable to those of other recognized universities and further recommended an *ad hoc* committee to review its report and determine the extent and sequence of the reorganization necessary.

A review committee under Dr. Gwee Ah Leng was set up to "determine the extent and sequence of reorganization deemed necessary."[34] The committee split on whether to recommend that Nantah should be integrated within the University of Malaya (as the University of Singapore then was) or, the majority opinion, whether there should be more than one university, provided that both were oriented towards a local content. Other recommendations included government aid by deficit financing, student bursaries and matching grants for donated capital funds; a board of selection for recruitment of staff and assessment of staff standards; better terms of service for the staff; and reforms of both curricula and of the examination system.

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[33] *Report of the Nanyang University Commission, 1959*, Singapore, Government Printer, 1959.
[34] *Report of the Nanyang University Review Committee*, Singapore, Government Printer, 1960.

The report was accepted in principle by the Singapore government, which stated that it was prepred to grant Nantah parity treatment with the University of Malaya in respect of Singapore students (some 40% of total enrolment) amounting to some $2.1 million in 1960/61, provided that reorganization was carried out as recommended by the committee.

In 1965, another committee was appointed by the university itself, under the chairmanship of Dr. Wang Gangwu "to review the current organization of courses of study and contents of individual courses in Nanyang University and to recommend to the University revised courses of study adapted to the needs of our society."[35] It reported the limited role of the University, in producing large number of graduates without adequate consideration of the prospects of employment for the graduates, or of high standards of research and teaching, or of the fundamental objectives of higher education in a plural society. It had so far catered only for students from Chinese-medium schools in the country, a function which was too narrow. The commission recommended admission of students from all streams of education, revision of the curriculum and also suggestions for amending the degree structure to allow for the award of both pass and honours degrees and higher degrees. It also recommended that a number of departments be discontinued or reoriented; provision of opportunities for research and recruitment of staff of high academic calibre and an upward revision of salaries in line with other university salaries in Malaya. The reaction to the report by the student body was most unfavourable and precipitated a series of violent clashes with the authorities and the police.

But since the reorganization of the university and intervention of the government, with the latter formally recognizing Nantah's degrees in 1968, the university has developed rapidly to serve its purpose in the national context. Its standards are also being raised to those of the University of Singapore.

The idea of a Singapore Polytechnic was first mooted in the fifties when a committee was formed in 1951 to investigate the shortage of trained draughtsmen and technicians in the engineering industry. In November 1958, the Polytechnic opened for classes formally. Its development is discernible in three stages, beginning with the initial stage when no clear direction was recognized since it offered a proliferation of courses at many levels. In 1959, its role was redefined to produce technically — trained manpower required to support the government's industrialization programme. The departments of Engineering, Architecture and Building, Accountancy and Nautical Studies were established in 1959, and diplomas were awarded at the professional, technician and crafts levels. In 1964, a team of specialists came out to advise the Polytechnic in detail as to further measures necessary.[36] In 1965, it was decided that the Polytechnic should confine itself to technician training and arrangements were made with the University of Singapore, whereby trained professional graduates of the Polytechnic were to be awarded degree by the University.

In 1968, the professional degree courses of the Polytechnic were transferred to the University where corresponding departments of Accountancy, Arcnitecture and Building and Engineering were set up. Since then, the Polytechnic has been reorganized into two main schools — the Schools of Industrial Technology and

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[35] *Report of the Nanyang University Curriculum Committee*, Singapore, Nanyang University, 1965, p 1

[36] See UNESCO and IAU, *op. cit.*, pp. 450-451

Nautical Studies. The former includes the departments of Civil Engineering and Building, Electrical and Electronic Engineering, Mechanical and Production Engineering, a Marine Engineering and Shipbuilding Division, a Rubber and Plastic Division, and a Mathematics and Science Division. The School of Nautical Studies offers a number of sea-training courses ranging from special pre-sea courses to full-time Marine Engineering courses.

Ngee Ann Technical College was founded in May 1963 by the Ngee Ann Kongsi, as an independent college of technology and commerce, teaching in both the Chinese and English languages. The entrance qualification is a school certificate or its equivalent and the courses are of four years' duration, or six years for part-time students. There are three faculties, namely Arts (with departments of Chinese and Malay Languages) Commerce (with department of Business Administration and Accountancy) and Technology (with departments of Applied Chemistry, Telecommunications and Domestic Science). The rather curious combination of departments is explained by the attempt to match the output of the college with the industrial and commercial needs of Singapore.

The term college implies that Ngee Ann is a full-fledged university but at the moment it appears to be rather filling the role and satisfying the standards of what is termed in the United States a "community college".[37] This posed the problem of recognition of its qualifications, and as in Nanyang University, the government intervened to assess the role of Ngee Ann. In 1966, the Ngee Ann Kongsi accepted the recommendation to reorganize the College into a technical college to offer diploma courses in engineering and commerce.[38] The name of Ngee Ann Technical College was thus accepted following an act of Parliament in 1968 which declared it formally a pubblic educational institution. Together with the Polytechnic, NATC is meeting adequately Singapore's growing demands for skilled technicians in various trades and industries.

The Teachers' Training College (TTC) was founded in 1950 as a serious attempt to put together training on a formal basis. Until 1959 it offered either two-year full-time certificate courses or three-year part-time normal courses. With the expansion of the school system in the 1960s, part-time courses were offered to students who at the same time assumed teaching responsibilites in school. By 1967, full-time courses were offered as the part-time scheme was at best only an *ad hoc* solution. In the second half of the 1960s, TTC also offered training for graduate teachers, for which a certificate-in-education was awarded, alongside the full-time course conducted at the University which carried the award of a Diploma in Education.

In December 1971, the School of Education at the University of Singapore was closed down, and the Department of Education at Nanyang also ceased to exist after recommendation by the Wang Gangwu Committee in 1965. Thus TTC assumed

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[37] In 1964, Arthur L. Singer Jr. from the Carnegie Corporation of New York and Lucian W. Pye from MIT recommended the role of a Community College for Ngee Ann. A community college is essentially a junior college in the American sense.

[38] *Report of the Committee of Review on the Future Development of Ngee Ann College*, Singapore, Ngee Ann Kongsi, 1966. The Chairman was Professor Thong Saw Pak and the terms of reference was "to review the organization of Ngee Ann College with special reference to the courses of study at present at the college, and in the light of the findings and the needs of our country, to recommend to the Ngee Ann Kongsi in what way this institution of higher learning should be developed, and how the organization and courses of study should be improved in order to bring about such development" p.1.

the role of the sole institution responsible for training teachers, and offering courses leading to higher degree in education. More recently, in 1973, the TTC became the Institute of Education, with some reorganization of its courses and teaching methods, to improve the quality of teacher training at all levels.

VI HIGHER EDUCATION AND DEVELOPMENT

The opening section of this paper pointed out the conceptual and methodological difficulties of establishing a clear nexus between the expansion of higher education and development. This being so, we shall therefore examine higher education in Singapore and West Malaysia from a wider social and economic perspective. In particular, we will look at the roles assigned to higher education and the market absorption of new graduates, the latter a useful indicator of higher education's contribution to current production.

The Singapore Experience

Between 1960 to 1969, total tertiary enrolment increased from 8,171 students to 12,836 students. Between 1960 and 1970, the school population increased from 337,189 to 508,841. Because of the relatively large tertiary base in 1960 (8,171 students compared to 676 in Malaysia), the proportion of tertiary level enrolment is fairly high although expansion has not been as rapid as in Malaysia.

About 21% of the national budget each year is spent on education, and tertiary education receives a disproportionate share. In 1969, while primary school enrolment was almost 30 times tertiary enrolment, government expenditure on recurrent expenditure for primary schools was only three and a half times that of tertiary education. In short the unit cost of higher education is extremely high relative to primary and secondary schooling. Tuition rates are low, and the net subsidy per student high. Students at the University of Singapore pay an annual tuition fee of $500 (increased to $600 for new students in 1974) while the average recurrent cost per student is in the region of $4,900.

In 1972, 4% of the relevant age-group was enrolled in the two universities in Singapore. A further 7.1% of the same age-group were enrolled in other institutions of higher learning. The enrolment by institution is given below:

Singapore Polytechnic	5,764
University of Singapore	5,226
Nanyang University	2,513
Ngee Ann Technical College	1,216
Singapore Technical Institute	616
Teachers' Training College	547
	15,882

Over the past twelve years, the total enrolment in tertiary education has doubled. In the next ten years, it is estimated that Singapore University enrolment will expand by about 4% annually while Nanyang University's enrolment is projected to rise steadily. The three technical institutes will have a total enrolment of 11,500 by the mid-eighties.

In the sixties government attention was focussed on the development of primary and secondary education. As this has been largely achieved, increasing attention is now being turned to the development of tertiary and technical education in the seventies in line with Singapore's aspiration to be a global city and a regional service centre.

What are the needs which tertiary education are called upon to fulfil? Continued economic growth in Singapore will need to be sustained by an increasingly sophisticated industrial sector. Thus an increased supply of skills, especially at the professional level, is essential. At the same time, the government has planned for an accelerated extension of social services — adequate housing, education and health facilities and improved mass transport and pollution control, all of which require additional skilled manpower. It is estimated that employment of professional and technical manpower is likely to increase from 49,600 in 1972 to over 100,000 by the end of the seventies to support industrial development and the expansion of social services.

In recognition of the significant emphasis placed on tertiary education and its cost, the planning and administration of higher education is under the close control of the government. In 1968, Dr. Toh Chin Chye, the Minister for Science and Technology, became the Vice-Chancellor of the University of Singapore. He has also been the Chairman of the Board of Governors of the Singapore Polytechnic since 1959.

Nanyang University, established as a private university in 1959, was reorganized in 1968 and brought under the close control of the government. Since then, it has received substantial public subsidy from the government and is now under the jurisdiction of the Ministry of Education. Similarly, in 1968, Ngee Ann Technical College was reorganized as a public educational institution and brought under the control of the Ministry of Education. This Ministry is also responsibile for the Institute of Education and the Singapore Technical Institute.

The prime consideration, where expansion is concerned, has been and still is, the manpower needs of the economy. This has had several important effects on the nature of tertiary education in Singapore.

First of all, tertiary education has remained an elite institution with highly selective criteria for entry, as opposed to mass institutions. Entry requirements have not been relaxed for any social purposes, as in Malaysia's case.

Secondly, curriculum development has been a planned response to the manpower needs of the economy. In 1969, three new faculties were added to the University of Singapore, viz. the Faculty of Engineering, the Faculty of Architecture and Building and the School of Accountancy and Business Administration. In 1968, the former Ngee Ann Institute of Technology and Commerce was reconstituted as the Ngee Ann Technical College. Care is taken that there be no wasteful overlap between universities and colleges. The University of Singapore is expected to develop into the principal centre of higher learning and research with emphasis given to professional courses while Nanyang University will emphasize humanities and commerce. The Institute of Education will be responsible for teacher-training. The training of senior technicians will be the responsibility of the Singapore Polytechnic and to a lesser extent, Ngee Ann. Ngee Ann and the Singapore Technical Institute will train junior technicians and advanced craftsmen.

The enrolment mix of the universities has adapted to changing manpower needs. In the University of Singapore for example, total enrolment in the three oldest faculties of Arts/Social Sciences, Science and Medicine dropped from 81.3% of total enrolment in 1968/69 to 40.6% of total enrolment in 1973/74.[39] By 1983, it is estimated that two-thirds of enrolment will be in the professional courses. A similar pattern can be discerned in Nanyang University; the enrolment in the College of Arts fell from 988 to 784 between 1962 and 1972 while that in the College of Commerce grew from 375 to 954.

However, more development of higher education is planned for. The expansion of the University of Singapore calls for the establishment of a new campus at Kent Ridge, which will house all the various faculties and schools in one area. There, more attention will be paid to research and post-graduate studies.

The cost of this expansion has been by no means small. Data in the Appendix indicate the increase in recurrent expenditure for all institutions, except the Singapore Technical Institute and the Institute of Education, for which figures are not available.

The employment studies all confirmed that the increased output from the institutions of higher learning in Singapore has been absorbed without difficulty by the labour market. It is an indication that the direction of expansion has been well-steered. The expenditure on higher education, on this criterion, is well justified.

The role of higher education in Singapore must be considered in the light of her economy, which is based more on the utilisation of human resources than on natural resources. The dynamic growth of the modern industrial sector of the economy in the last few years has also accounted for the ease with which graduates have been absorbed into the labour market. The findings of a series of employment surveys on graduates of Singapore University, Polytechnic and Ngee Ann in the past few years suggest that most graduates are able to land a job within three months of their graduation. First-job salaries of University of Singapore graduates have also been rising and at a very swift rate for business administration, economics, accountancy, engineering, architecture, building and estate management graduates.[40] Nanyang University graduates generally took a little longer (waiting time for employment is between four to six months) time to find employment.[41] There is however no sign of chronic or persistent joblessness among college graduates in Singapore. Another factor is surely the strict control exerted over expansion, a control based primarily on one criterion — the efficiency of the allocation of resources.

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[39] Lim Chong Yah, *Mass versus Selective Higher Education in South East Asia — The Responses of the University of Singapore*, paper presented at RIHED workshop, Chiang Mai, November 29 — December 2, 1973.

[40] See Economic Research Centre, Graduate Employment Survey Reports on University of Singapore, Ngee Ann and Polytechnic graduates, 1973-74.

[41] See Ong Teck Hong and Yang Chung-Hon, *An Analysis of the Employment Experiences of 1971-72 and 1972-73 Nanyang University Graduates* (in Chinese), Singapore, Nanyang University, May 1974.

In the seventies, the objective is to transform Singapore into the brain-centre for Southeast Asia. Clearly, higher education has a crucial role to play if this aim is to be achieved, although evidence does not suggest that higher education was the key ingredient in Singapore's rapid development in the late sixties. Indeed industrialization in Singapore probably proceeded before the extensive revamping of the educational system.[42] However, it seems certain that sustained economic development requires highly-skilled manpower and research.

Economic development in the seventies however, will depend essentially on the ability of the leaders and people to respond effectively to change and the need for change. This capacity to adapt to rapid changes is probably one of the most important contributions of education to development. If anything, it has been this capacity which has helped Singapore to weather a series of adverse circumstances which it confronted following its separation from Malaysia in 1965.

Account should also be taken of the political and social effects of the expansion of tertiary education in Singapore. Obviously, tertiary education acts as an important avenue of social mobility. Just as importantly, its selective criteria emphasize meritocracy as the governing principle in the socio-economic structure. Entry into the universities is determined primarily by academic qualification and government scholarships are awarded on academic merit rather than financial need. As it is one of the major rationing principles, the pratice of meritocratic selection has important implications for occupational aspirations and the distribution of rewards in the social system. Over time the inequalities of rewards associated with the meritocratic system will become more pronounced. At some point, higher education would need to pay more attention to its impact on social equity.

VII THE MALAYSIAN EXPERIENCE

Relationship of Higher Education to Other Levels of Education

The development of higher education in Malaysia has been described in an earlier section. It may be useful however to look at these trends in terms of the other levels of education.

In 1960, the proportion enrolled at the first, second and third levels of education was 89.6: 10.3: 0.1. In 1970, however, the proportion enrolled had changed to 74.2: 25.4: 0.4. While there has been general increase in all levels of education, secondary and tertiary education have increased more rapidly, with tertiary enrolments tripling between 1960 and 1965, and doubling between 1965 and 1970. Furthermore, tertiary education was expected to increase another four-times during the course of the Second Malaysia Plan.

About 20% of the national budget is devoted to eduation and the rising cost of education can be seen from the fact that in West Malaysia in 1957 total expenditure per capita on education was only $5.8, but by 1968 the sum had risen to $42.9. Relatively speaking, the amount which goes to tertiary education is very high, as the average unit cost of a primary school student per year is around $150; for a secondary school student about $200 but for a university student ranging from over $2,000 for an Arts student to around $12,000 for a medical student.

[42] See D. Clark, *Employment Premotion in Singapore*, unpublished paper, April 1974.

Expansion: Rationale and Pattern

In 1959, there were one university, one technical college and one agricultural college, with a total enrolment of 710 students. In 1965 a UNESCO Regional Advisory Team for Educational Planning in Asia recommended that "the highest priority should be given to the higher education level in future." By 1973, 14 years after the first university was set up with an enrolment of 320, there were five universities and three colleges with a total enrolment of 22,192 students. Expansion, especially since 1969, has been phenomenal. Between 1969 and 1973, three new universities were established, one college was elevated to university status and two new colleges were founded. Student enrolment between 1970-1973 alone registered a 66% increase.

As the provision of higher education is the virtual monopoly of the government, the expansion of tertiary education is controlled by the government. What were the considerations which led to the decision to accelerate expansion of tertiary education?

The Higher Education Planning Committee was set up to study and make recommendations for the expansion of higher education in the country. Its final report in 1967, in contrast to earlier Plans, gave top priority to upper secondary and tertiary level education. The formula has been that "courses of higher education should be available for all those who are qualified by ability and attainment to pursue them and who wish to do so". Since the HSC is considered proof of ability, the expansion of the secondary school system naturally led to an increase in the demand for university education by qualified students. In 1974, out of 22,434 applicants for university places, only 6,095 were awarded places.

After 1969, the desire to redress inequities in the opportunity structure of Malaysian society became a crucial expansionary factor. The avowed aim was to increase Malay participation in tertiary education. There was first the need to provide tertiary education in Malay to Malay-medium secondary school graduates. The Malay secondary stream has shown a phenomenal increase in enrolment of 64 % bet-

TABLE 2

University of Malaya: Enrolments and Educational Opportunity by Ethnic Group, 1965-66

Item	Malays	Chinese	Indians
Students Number	721	1669	395
Percentage	25.4	58.9	13.9
Higher Education Rate[1]	18	56	44
Probability of Access (per thousand)[2]	2	8	6

Notes: 1. Number of students per 100,000 inhabitants of the same ethnic group.
2. The ratio of the number of students in 1965-66 to the population of the same ethnic group aged 20 and 24 in 1967-68.

Source: Adapted from J.P. Arles, "Ethnic and Socio-Economic Patterns in Malaysia", *International Labour Review*, 104, 6(1971).

ween 1958 to 1967. Yet for a long time there were no Malay-medium universities. This was the main reason for the setting up of Universiti Kebangsaan, where the medium of instruction is Malay. Secondly, the new policy of restructuring society outlined in the Second Malaysia Plan called for greater access to opportunity structures for Malays. In 1965-66, as the above table shows, the probability of access to university education was two per thousand for Malays, eight for Chinese and six for Indians.

The policy called for a greater number of places in the universities for Malays. Furthermore, the plan to create a new Malay entrepreneurial class which could participate effectively in the modern industrial sector reinforced the need for more university places for Malays. By 1974, well over 60% of new admissions to the five universities were Bumiputras.

Once the policy of increasing Malay participation was made, the problem of maintaining a racial balance emerged. If increasing Malay participation meant limiting places for non-Malays, a potentially explosive political problem arises as the allocation of places in institutions of higher learning was no longer based on exclusively objective criteria but a combination of performance and race, with the latter being given more weight.

The main signals to which tertiary education responded were clearly political and social rather than economic. It was the university's capacity to facilitate upward social mobility which stimulated the growth of university enrolment. While the triggering forces were non-economic, the expansion was also consonant with a private and economic perspective of higher education — higher education was relatively cheap for the individual principally because of heavy state subsidies and given the enormous pecuniary benefits accruing to the individual, the decision to seek further education was certainly rational.

TABLES 3 and 4 indicate the large income differentials associated with different levels of education.

TABLE 3

Starting Pay by Educational Level

Level of Education	Starting Salary (Per Month)
Honours degree	$600 — $1,000
Pass degree	$500
HSC or SC and College Training	$350 — $ 400
School Certificate	$160 — $ 250
Skilled workers	$160 — $ 250
Unskilled labour outside peasant agriculture	$ 60 — $ 170
Unskilled labour in peasant agriculture	$ 30 — $ 45

Source: Suffian Report, K.L. Government Press, 1969.

TABLE 3, for instance, reveals that earnings of honours graduates are between eight and thirteen times higher than per capita income and between thirteen and thirty times higher than earnings in peasant agriculture. If average earnings were used instead, then the differentials would be even greater.

At the same time, the private costs of university education, though high in relation to the average per capita income, are still low in relation to the total costs and to anticipated lifetime income. In fact, Hoerr has estimated that the net private internal rate of return to higher education was 49.8, the highest for any level and more than double that for primary education.[43]

TABLE 4

Individual Monthly Income by Educational Level, West Malaysia, 1974

Monthly Income / Education	Total	Less than $100	$100-199	$200-499	$500-999	$1,000 and above
No School	27.5%	38.8%	21.3%	11.5%	7.4%	5.3%
Primary School[1]	53.3	50.2	61.8	50.4	28.5	18.8
Lower Secondary[2]	12.3	9.1	11.9	19.2	22.3	15.9
Upper/university Secondary[3]	6.9	1.9	5.1	18.9	41.8	60.0
Total	100% 40255	100% 19176	100% 12629	100% 7039	100% 1316	100% 452

Source: Department of Statistics, Kuala Lumpur, Malaysia, unpublished tables.

Notes: 1. Includes persons with completed primary education (six years of education) as well as persons with some primary education.

2. Includes persons with completed lower secondary (three years of post primary education) as well as persons with some lower secondary education.

3. Includes all persons with completed as well as some upper secondary (Form IV to Form VI) and post university education.

The question that arises is whether the income structure corresponds with the development needs of the economy, or more specifically, with manpower needs. A 1965 Manpower Survey estimated a shortage of 18,000 highly qualified workers, a sizeable number of them at the professional level, which suggests that more university-trained manpower was required. There are however a large number of problems involved in translating manpower requirements into educational enrolments.

[43] O.D. Hoerr, Education, Income and Equity in Malaysia, Economic Development Report No. 176, presented at the D.A.S. Conference, Dubrovnik, Yugoslavia, June 1970.

The major portion of the expansion of tertiary education has been in the direction of Arts and Humanities enrolment. In the University of Malaya, the National University of Malaysia (Universiti Kebangsaan), and the University of Science, Malaysia (Universiti Sains Malaysia) taken together, enrolment in the Arts Faculty is the highest. Although attempts are being made to balance the enrolment pattern one major impediment is the preference of Bumiputras for ready Arts subjects. One possible reason for this is the incentive structure which offers Bumiputras best job opportunities in the civil service. Another reason for their poor enrolment and performance in the science and professional courses is their disadvantaged background in science and mathematics, particularly for Bumiputras from the rural areas.

Expansion has involved the build-up of universities, from one in 1968 to five in 1974, not including the other institutions. One effect is that these institutions are now more geographically dispersed, allowing for greater regional spin-offs and access to educational development. However, it has also resulted in some expensive duplication of courses; for example, engineering is taught in the University of Malaya, the National Institute of Technology and the Mara Institute of Technology. To some extent the duplication of facilities and courses is the result of lack of coordination among the various institutions. Mara's engineering school is planning to graduate its eight final-year students in 1974 although its degree has still to be recognized by the Malaysian government.

Costs and Benefits

As enrolment expanded, so did costs. Lee has estimated the cost to be $7,500 per university student and $6,000 per college student.[44] Average unit cost varies considerably among institutions, and is understandably, much higher for new institutions. The cost of university education is illustrated here by TABLE 5.

TABLE 5

Costs, Fees and Net Subsidies of Students by Course of Study, University of Malaya, 1969

Course of Study	% of Total Students	Fees	Cost/ Student	Net Subsidy/Student
Arts	42.3%	$477	2,268	1,791
Agriculture	4.1%	$477	5,733	5,256
Economics/ Administration	17.1%	$477	2,569	2,092
Education	4.8%	$477	3,678	3,201
Engineering	5.4%	$477	4,099	3,622
Medicine	7.9%	$612	11,841	11,229
Science	18.4%	$522	4,294	3,772
Average for University		$496	3,759	3,263

[44] Eddy Lee, *Educational Planning in West Malaysia*, Oxford in Asia Current Affairs.

The net subsidy per student was $3,263 while the amount contributed by the student came to only $496. Actually, this data hides the real extent of public subsidy to higher education as a substantial number of students in institutions of higher learning hold bursaries or scholarships. For example, out of over a thousand students enrolled in Universiti Kebangsaan this year, only about fifty paid tuition fees.

Unfortunately, there are no published studies on the absorption of graduates into the job market.

Discussions with officials of various institutions reveal no grave concern about persistent graduate unemployment.

One unpublished study made of 1969-1971 University of Malaya graduates showed that the mean waiting period before first employment was 4.2 months. However, there was a decline in the proportion of graduates employed in the private sector, and a corresponding increase in employment in the public sector, Thirty five per cent of the graduates became teachers, 21% administrators and 22% practising professionals. The average salaries for 1969, 1970 and 1971 graduates were $948, $866 and $708 per month respectively, which suggests a weakening in the market demand for university graduates.

The full impact on the labour market of the accelerated expansion in the early seventies has yet to be felt. By 1988, the output of university graduates will be eight times that of 1969, truly a phenomenal increase which augurs ill for the future unless development steps up considerably in the next decade. There are three possible ways in which this vast number of graduates may be absorbed into the job market.

(i) Though economic expansion which would generate employment of a magnitude sufficient to keep up with the expansion of tertiary education. However, as Hoerr has noted "even a dynamic economy rapidly deepening its technological base cannot readily absorb changes of this magnitude".

(ii) Should there be insufficient economic expansion, then in the face of excessive supply, there will be a lowering of wage levels which appears to be already taking place.

(iii) Since wage-levels are somewhat inflexible downwards, the most likely effect would be an upgrading of educational qualifications for jobs so that whereas an HSC qualification was once considered adequate, a university degree would henceforth be required.

In other words, private returns to education are likely to fall in the next decade. Since the private costs of a university education are likely to remain relatively low, rising qualifications for jobs may stimulate an even greater demand for university education. The better employment and income prospects for university graduates relative to lower-level graduates cannot of course be used to justify the investment in higher education, as their job chances reflect the efficiency of certification rather than the teaching or productivity functions of universities. The student demonstrations in the MARA Institute of Technology in 1974 demanding degree status for the present diplomas issued by the Institute perhaps illustrate the drive for certification.

How worthwhile is the Malaysian investment in higher education? Heorr's findings based on 1967-68 data, (before the accelerated expansion in enrolments) are given in TABLE 6. The internal rate of return is that rate of interest which equates the net earnings stream over a lifetime to zero. Private rates include only the costs to the individual while social rates reflect societal resource costs, resources which have an opportunity value.

Not only is the net social return to university education the lowest, it is probably below capital's presumed marginal productivity. Judged in terms of economic efficiency, the present large societal investment in higher education does not appear to be warranted. But then economic efficiency is only one criterion, and not the most important one in the Malaysian's government reckoning.

TABLE 6

Internal Rates of Return to Education,
West Malaysia, 1967-1968

Marginal

Level of Education	Net Social	Net Private
Unschooled	8.2	12.9
Primary	15.6	21.1
Forms 1-2	15.3	18.9
Forms 3-4	12.8	15.6
SC — HSC	2.8	11.4
University	6.0	49.8

Source: Hoerr, *op. cit.*

Equity

Strong support for expansion of tertiary education is based on equity considerations viz. that it helps to increase the life-chances of the poor and the disadvantaged groups. A closer examination of the issue, however, suggests that higher education in Malaysia benefits the well-to-do more than the poor. The Murad Report noted the sharp selection by social class into secondary schools in Malaysia,[45] a process further accentuated at the tertiary level. Since the middleclass households are the main beneficiaries of tertiary education, and since tertiary education is financed almost entirely by public taxes, expenditure on higher education represents a kind of income transfer from the poor to the rich. On equity grounds therefore, excessive expenditure on higher education most probably represents a misallocation of resources. However, in Malaysia, the question of equity is somewhat complicated by the fact that equity refers to equity on a group basis rather than to individuals. Even so, it is likely that the better income Malay households are more able to take advantages of the concessions, with the result that intra-racial differences might also be exacerbated.

[45]Murad bin Mohd Noor, *Kajian Keciciran*, Ministry of Education Malaysia, Kuala Lumpur, 1973 Chapter 2.

Calculation of benefits cannot wholly be in economic or equity terms. The symbolic or ideological value of tertiary education is very important too, especially in a multi-racial society like Malaysia's. First of all, its certification-function, though leading to some pernicious effects, has the appearance of meritocracy. Though inefficient economically as a selection device, it may be the most efficient means of selection in a situation of scarcity by keeping social dissatisfaction to a minimum. Secondly, the expansion of tertiary education may be the only way to deepen the Bumiputra participation in the modern sectors of the economy.

Notwithstanding the possible beneficial effects of higher education, it is reasonable to suggest that some effort should go into making investment in higher education more economically worthwhile than it presently is. To succeed two problems must be overcome: (i) the over-valuation of certificates issued by institutions of higher learning by the labour market, (ii) the large disparity between the private and social rates of return to higher education.

It is suggested therefore that reforms be extended not only to the educational system but also to labour market policy. Market signals and hiring practices need to be made more responsive and less education biased. In this, the public sector, being a major employer of graduate manpower, could be the initiator.

Secondly, alternatives to the present system of financing higher education must be found. The present subsidy programme must be replaced or supplemented by a loan programme in which more of the costs of higher education are borne by students. Major employers could also be encouraged to pay part of the cost for university education which to some extent may reduce the selection and training costs of firms.

VIII CONCLUSION

In the foregoing discussion we have reviewed and discussed the general argument pertaining to the relationship between higher education and economic growth. In our discussion we have endeavoured to point out the conceptual and methodological difficulties in establishing a clear nexus between the expansion of higher education and economic growth. Furthermore, one major limitation of the previous studies on the subject is that they contain no theory to explain how a high level of educational attainment of the labour force, or, for that purpose of population, leads to an accelerated economic growth. From the existing studies it is also not clear whether a country is economically prosperous because its people are well educated, or whether its people are well educated because they can afford to spend more on education. We have also argued that even if a causal relationship between educational investment and economic growth can be established — an unlikely event — the time interval would still need to be determined. Thus a rapid expansion of higher education may yield dividends only after one or two decades.

Our examination of the relationship between higher education and economic growth in Singapore and Malaysia seems to confirm our above observations. In the last two decades or so higher education has expanded rapidly in Singapore and Malaysia. At the same time the economies of the two states have been growing at a relatively high rate since the sixties. However, our analysis shows that there are significant differences in the development and functions of tertiary education in Singapore and Malaysia. These differences reflect and are reflected in the different nature of socio-economic development in the two countries. Our conclusion is that the development of tertiary education must not be seen in a given determinate relationship. The relationship between educational system and society is exceedingly

complex, with education much subjected to the varied demands of society, although also able to influence them.

At this stage it is not possible to work out the exact nature and direction of this relationship. But both in Singapore and Malaysia, as in all other countries, there has been an implicit assumption that there are external benefits of higher education and the attainment of these benefits justifies and necessitates extensive public expenditure and subsidy. While this is true, it should be realized that the external benefits and costs of tertiary education depend on the type of education and the type of society in which the educational system is embedded.

APPENDIX TABLE 1

UNIVERSITY OF SINGAPORE ENROLMENT BY FACULTY, 1961/1962 – 1972/1973

Faculty \ Year	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73
Arts/Social Science	422	587	642	627	755	854	1,062	1,321	1,107	904	734	909
Science	275	383	502	632	724	807	936	1,067	1,023	774	629	553
Law	295	359	426	367	402	314	310	–	–	–	–	–
Accountancy Business Admin.	–	–	–	–	–	24	–	–	203	284	359	495
Medicine	561	582	595	644	659	682	664	674	640	582	583	576
Dentistry	128	136	167	182	188	197	193	189	173	161	150	168
Pharmacy	82	102	101	120	142	134	118	110	80	56	54	70
Architecture	–	–	–	–	–	–	–	–	94	124	143	174
Building and Estate Management	–	–	–	–	–	–	–	–	34	107	142	146
Engineering	–	–	–	–	–	–	–	–	394	643	793	931
Total	1,763	2,149	2,433	2,572	2,870	3,012	3,283	3,714	4,507	4,433	4,406	4,934

Source: University of Singapore Annual Reports 1961/1962 – 1972/1973.

APPENDIX TABLE 2

UNIVERSITY OF SINGAPORE : COST PER STUDENT

Year	Gross Recurrent Expenditure ($'000)	Total Enro'ment	Average Cost Per Student (Estimated)	Average Fee Per Student*	Subsidy on each student (Estimated)
1961/1962	8,541.9	1,763	4,845	450	4,395
1862/1963	9,560.0	2,149	4,448	450	3,998
1963/1964	10,437.4	2,433	4,289	450	3,839
1964/1965	10,847.3	2,572	4,217	450	3,767
1965/1966	10,717.9	2,870	3,734	450	3,284
1966/1967	11,726.6	3,012	3,893	450	3,443
1967/1968	12,557.3	3,283	3,824	450	3,374
1968/1969	13,181.2	3,714	3,549	450	3,099
1969/1970	17,503.9	4,507	3,883	450	3,433
1970/1971	17,962.0	4,433	4,051	450	3,601
1971/1972	20,384.7	4,406	4,626	500	4,086
1972/1973	24,062.4	4,934	4,876	500	4,336

Source: University of Singapore Annual Reports 1961/1962 – 1972/1973.

Note: All estimates of average cost per student is done by dividing the gross recurrent expenditure by the total enrolment. The subsidy is calculated by eliminating the amount paid as fees. Needless to say, the figures are subjected to great errors.

* Figures in this column do not include medical student fee.

APPENDIX TABLE 3

1972 UNIVERSITY OF SINGAPORE GRADUATES BY FACULTY, CLASS OF AWARD AND RENUMERATION

	Honours						Pass						Total					
	<$500	$500-750	$751-1000	>$1,000	Number of Graduates	Mean Pay	<$500	$500-750	$751-1000	>$1,000	Number of Graduates	Mean Pay	<$500	$500-750	$751-1000	>$1,000	Number of Graduates	Mean Pay
Engineering	–	1	12	2	15	888	–	1	17	3	21	895	–	2	29	5	36	892
Architecture	–	–	–	–	–	–	–	–	8	–	8	875	–	–	8	–	8	875
Arts/Social Science	–	–	–	–	–	–	25	10	1	2	38	542	25	10	1	2	38	542
Science	1	18	19	4	42	779	27	4	1	–	32	485	28	22	20	4	74	662
Building and Estate Management	–	–	–	–	–	–	2	1	5	12	20	955	2	1	5	12	20	955
Accountancy	–	11	3	–	14	679	5	35	10	8	58	718	5	46	13	8	72	710
Business Administration	–	–	–	–	–	–	5	5	7	1	18	700	5	5	7	1	18	700
Total	1	30	34	6	71	783	64	56	49	26	195	693	65	86	83	32	266	717

Note: In calculating mean pay $450 and $1,000 are taken as average for the lower and upper open-ended groups respectively.

Source: Economic Research Centre, *Graduate Employment Survey Report of 1972 graduates*, November 1972.

APPENDIX TABLE 4

SINGAPORE POLYTECHNIC STUDENT ENROLMENT 1959 – 1973

	1959/1960	1960/1961	1961/1962	1962/1963	1963/1964	1964/1965	1965/1966	1966/1967	1967/1968	1968/1969	1969/1970	1970/1971	1971/1972	1972/1973	1973/1974
ACCOUNTANCY															
Degree	–	–	–	–	–	–	155	263	377	422	–	–	–	–	–
Professional Diploma	140	237	310	380	449	323	162	122	47	7	–	–	–	–	–
Sub-Total	140	237	310	380	449	323	317	385	424	429	–	–	–	–	–
ARCHITECTURE AND BUILDING															
Degree	–	–	–	–	–	–	17	43	68	75	–	–	–	–	–
Professional Diploma	127	162	158	171	176	163	151	123	113	94	58	50	7	–	–
Technician	219	157	282	293	348	393	490	556	533	574	624	651	734	694	805
Craft	278	194	126	148	–	–	–	–	–	–	–	–	–	–	–
Sub-Total	624	513	566	612	524	556	658	722	714	743	682	701	741	694	805
ENGINEERING															
Degree	–	–	–	–	–	–	70	157	312	350	–	–	–	–	–
Professional Diploma	68	181	218	243	297	151	111	54	16	1	–	–	–	–	–
Technician	511	698	637	677	898	957	1,199	1,307	1,448	1,641	1,889	2,332	2,518	4,224	5,474
Craft	448	595	655	677	24	–	–	–	–	–	–	–	–	–	–
ITC	–	–	–	–	–	–	–	–	–	–	573	879	898	429	533
D'ship	–	–	–	–	–	–	–	–	–	–	–	–	117	208	218
Sub-Total	1,027	1,474	1,510	1,597	1,219	1,108	1,380	1,518	1,776	1,992	2,462	3,211	3,533	4,861	6,225
NAUTICAL															
Pre-Sea and MRO	370	115	124	109	190	160	117	121	130	174	110	122	131	142	147
*Grand Total	2,161	2,339	2,510	2,698	2,382	2,147	2,472	2,746	3,044	3,338	3,254	4,034	4,405	5,697	7,177

*Excludes enrolment to short courses.

Source: Singapore Polytechnic *Annual Report 1973/1974.*

APPENDIX TABLE 5

SINGAPORE POLYTECHNIC: COST PER STUDENT

Year	Gross Recurrent Expenditure ($'000)	Total Enrolment (Part-Time and Full-Time)	Average Cost Per Student	Average Fee Per Student	Subsidy on Each Student
1959	1,669	1,673	997	167	830
1960	1,522	2,096	726	184	542
1961	1,932	2,141	902	174	728
1962	2,169	2,698	803	176	627
1963	2,447	1,927	1,269	256	1,013
1964	2,443	2,023	1,207	243	964
1965	2,913	2,248	1,295	211	1,084
1966	3,346	2,371	1,411	254	1,157
1967	4,053	2,758	1,469	241	1,128
1968	4,525	3,131	1,445	271	1,174
1970 (15 Mths)	6,123	2,870	2,133	440	1,693
1971	4,732	3,521	1,343	309	1,034
1972	5,986	4,147	1,443	315	1,128
1973	7,556	5,330	1,417	330	1,087
1974	8,972	6,832	1,313	344	969

*Calculated from $\frac{\text{total fees collected by the Polytechnic}}{\text{total number of students}}$

Source: Computed from Singapore Polytechnic *Annual Report, 1973/1974.*

APPENDIX TABLE 6

PROFILE OF EMPLOYED SINGAPORE POLYTECHNIC GRADUATES, 1973, FULL-TIME STUDENTS

	Diploma								Certificate				
	TB	TEC	TEE	TEELC	TEM	TEP	TEMAR	TRP	PRE-AERO	TADC	TMDC	ITC	TOTAL
1. EMPLOYMENT STATUS													
Working	21	15	21	49	50	21	20	10	24	46	8	83	368
National Service	15	28	20	37	52	43	3	2	2	13	3	125	343
Unemployed	1	1	1	3	5	4	1	4	–	–	1	26	47
Further Studies	–	–	1	5	7	3	–	–	1	–	3	156	176
Total	37	44	43	94	114	71	24	16	27	59	15	390	934
2. LENGTH OF TIME TAKEN TO FIND FIRST JOB													
Less than 1 month	9	3	9	18	14	4	7	3	3	22	5	3	100
1 – 3 months	7	5	6	16	15	8	10	4	19	12	2	25	129
4 – 5 months	4	6	6	15	19	8	2	3	1	10	1	40	115
6 months or more	1	1	–	–	2	1	1	–	1	2	–	15	24
Total	21	15	21	49	50	21	20	10	24	46	8	83	368
3. EMPLOYMENT SECTOR													
Private	21	9	15	30	38	21	20	10	24	43	7	62	300
Government	–	2	–	–	–	–	–	–	–	–	–	2	4
Statutory Board	–	6	19	12	–	–	–	–	–	3	1	19	64
Total	21	15	21	49	50	21	20	10	24	46	8	83	368

Source: Pang Eng Fong (assisted by Mrs. Patrick Low), *A Report on the 1973 Singapore Polytechnic Graduate Employment Survey*, May 1974.

Key:
TB – Building
TEC – Civil Engineering
TEE – Electrical Engineering
TEELC – Electronic and Communications Engineering
TEM – Mechanical Engineering
TEP – Production Engineering
TEMAR – Marine Engineering
TRP – Rubber and Plastics
PRE-AERO – Pre-Aeronautical Engineering
TADC – Architectural Draughtsmanship
TMDC – Mechanical Draughtsmanship
ITC – Industrial Technician Certificate

APPENDIX TABLE 7
SALARY OF EMPLOYED SINGAPORE POLYTECHNIC GRADUATES, 1973
(FULL-TIME STUDENTS ONLY)

	Diploma								Certificate				All Respondents
	TB	TEC	TEE	TEELC	TEM	TEP	TEMAR	TRP	PRE-AERO	TADC	TMDC	ITC	
Less than $200	–	–	–	–	–	–	–	–	24	2	–	2	28
$200 – $299	–	–	–	–	–	–	–	–	–	37	7	21	65
$300 – $399	–	–	2	–	2	–	–	1	–	7	1	52	65
$400 – $499	6	7	9	37	19	7	1	5	–	–	–	7	98
$500 – $599	14	5	7	11	22	12	–	3	–	–	–	1	75
$600 – $699	–	2	3	1	3	1	5	–	–	–	–	–	15
$700 – $799	1	1	–	–	3	1	2	1	–	–	–	–	9
$800 – $899	–	–	–	–	1	–	5	–	–	–	–	–	6
$900 – $999	–	–	–	–	–	–	1	–	–	–	–	–	1
$1,000 over Over	–	–	–	–	–	–	6	–	–	–	–	–	6
Total	21	15	21	49	50	21	20	10	24	46	8	83	268

Source: Pang Eng Fong (assisted by Mrs. Patrick Low) *A Report on the 1973 Singapore Polytechnic Graduate Employment Survey*, May 1974.

Key:
TB – Building
TEC – Civil Engineering
TEE – Electrical Engineering
TEELC – Electronic and Communications Engineering
TEM – Mechanical Engineering
TEP – Production Engineering
TEMAR – Marine Engineering
TRP – Rubber and Plastics
PRE-AERO – Pre-Aeronautical Engineering
TADC – Architectural Draughtsmanship
TMDC – Mechanical Draughtsmanship
ITC – Industrial Technician Certificate

APPENDIX TABLE 8

NANYANG UNIVERSITY: ENROLMENT, 1956 – 1972/1973

Faculty / Year	Arts	Science	Commerce	Graduate Studies	Language Centre	Department For Provision Students	Total
1956	239	256	89	–	–	–	584
1957	388	327	185	–	–	–	900
1958	606	502	220	–	–	–	1,328
1959	810	629	237	–	–	–	1,726
1960	902	694	265	–	–	–	1,861
1961	964	690	306	–	–	–	1,960
1962	988	747	375	–	–	–	2,110
1963	761	840	723	–	–	–	2,324
1964	702	860	711	–	–	–	2,273
1965/1966	551	885	690	–	–	–	2,126
1966/1967	471	794	581	–	–	–	1,851
1967/1968	507	729	514	–	–	–	1,750
1968/1969	649	774	568	–	–	–	1,991
1969/1970	694	723	607	–	15	–	2,039
1970/1971	720	731	734	24	24	77	2,310
1971/1972	719	659	823	41	22	135	2,399
1972/1973	784	655	954	62	58	83	2,596

Source: Nanyang University, *Annual Reports*, various years, and Bursar's Office, Nanyang University.

APPENDIX TABLE 9

NANYANG UNIVERSITY: COST PER STUDENT

Year	Gross Recurrent Expenditure ($)	Total Enrolment	Average Cost Per Student (S$)	Average Fee Per Student (S$)	Subsidy on Each Student (S$)
1960	2,229,769	1,861	1,198	720	478
1961	2,111,576	1,960	1,077	720	357
1962	2,320,437	2,110	1,099	720	379
1963	2,654,976	2,324	1,142	720	422
1964	2,720,318	2,273	1,196	720	476
1965	3,493,472	2,126	1,643	720	923
1966	2,842,460	1,851	1,535	720	815
1967	3,429,495	1,750	1,959	540	1,419
1968	4,000,721	1,991	2,009	540	1,469
1969	4,748,404	2,039	2,328	540	1,788
1970/1971	7,115,040	2,310	3,080	540	2,540
1971/1972	6,309,499	2,399	2,630	540	2,090
1972/1973	7,855,269	2,596	3,025	540	2,485

Source: Nanyang University, *Annual Reports*, various years, and Bursar's Office, Nanyang University.

APPENDIX TABLE 10

NANYANG UNIVERSITY: EMPLOYMENT STATUS OF 1972 – 1973 GRADUATES

A. GRADUATE WITHOUT HONOURS

Status / Faculty	Full-Time	Part-Time	Self-Employed	National Service	Unemployed	Post-Graduate Studies	Others	Total
Arts	47 (24.6%)	5 (2.6%)	5 (2.6%)	20 (10.5%)	68 (35.6%)	32 (16.8%)	14 (7.3%)	191
Science	26 (20.6%)	2 (1.6%)	7 (5.6%)	29 (23.0%)	25 (19.8%)	33 (26.2%)	4 (3.2%)	126
Commerce	58 (34.3%)	4 (2.4%)	10 (5.9%)	22 (13.0%)	34 (20.1%)	32 (19.0%)	9 (5.3%)	169
Total	131 (27.0%)	11 (2.3%)	22 (4.5%)	71 (14.6%)	127 (26.1%)	97 (20.0%)	27 (5.5%)	486

B. GRADUATE WITH HONOURS

Status / Faculty	Full-Time	Part-Time	Self-Employed	National Service	Unemployed	Post-Graduate Studies	Others	Total
Arts	18 (46.1%)	1 (2.6%)	1 (2.6%)	13 (33.3%)	1 (2.6%)	3 (7.7%)	2 (5.1%)	39
Science	12 (28.6%)	1 (2.4%)	0 (0.0%)	19 (45.2%)	7 (16.6%)	1 (2.4%)	2 (4.8%)	42
Commerce	8 (25.8%)	0 (0.0%)	2 (6.5%)	20 (64.5%)	0 (0.0%)	0 (0.0%)	1 (3.2%)	31
Total	38 (33.9%)	2 (1.8%)	3 (2.7%)	52 (46.4%)	8 (7.1%)	4 (3.6%)	5 (4.5%)	112

Source : Ong Teck Hong and Yang Chung Hou, *An Analysis of the Employment Experiences of 1971-1972 and 1972-1973, Nanyang University Graduates,* Singapore: Nanyang University, 1974 pp. 25 and 28.

APPENDIX TABLE 11

MEAN STARTING SALARY OF 1971/72 AND 1972/73 NANYANG UNIVERSITY GRADUATES STARTING SALARY

	Sector	Arts Graduates		Science Graduates		Commerce Graduates	
		1971/1972	1972/1973	1971/1972	1972/1973	1971/1972	1972/1973
MALE GRADUATES							
	Public	$500	$465	$500	$465	$588	$465
	Private (Local)	500	450	500	470	550	600
	Private (Foreign)	500	500	580	600	700	720
FEMALE GRADUATES							
	Public	465	465	485	465	575	465
	Private (Local)	450	350	275	350	500	350
	Private (Foreign)	420	350	350	450	600	500

Source: Ong Teck Hong and Yang Chung Hou, *An Analysis of the Employment Experiences of 1971-1972 and 1972-1973, Nanyang University Graduates,* Singapore: Nanyang University, 1974 pp. 25 and 28.

APPENDIX TABLE 12

PROFILE OF EMPLOYED NANYANG UNIVERSITY GRADUATES 1971-1972, 1972-1973 (PERIOD OF UNEMPLOYMENT)

Length of time taken to find first job	Graduates without Honours	Graduates with Honours
Less than 1 Month	7 (4.3%)	3 (18.8%)
1 – 3 Months	34 (20.7%)	4 (25.0%)
4 – 6 Months	89 (54.3%)	6 (37.5%)
6 Months – 1 Year	23 (14.0%)	2 (12.5%)
More than 1 Year	11 (6.7%)	1 (6.2%)
Total	164 (100.0%)	16 (100.0%)

Source: Ong Teck Hong and Yang Chung Hou, *An Analysis of the Employment Experiences of 1971-1972 and 1972-1973, Nanyang University Graduates,* Singapore: Nanyang University, 1974 pp. 25 and 28.

APPENDIX TABLE 13

NGEE ANN TECHNICAL COLLEGE: COST PER STUDENT

Year	Gross Recurrent Expenditure (S$)	Total Enrolment	Average Cost Per Student	Average Fee Per Student+	Subsidy On Each Student
1970/1971	858,366	627	1,369	150	1,219
1971/1972	1,476,620	1,013	1,457	150	1,307
1972/1973	1,767,141	1,205	1,466	150	1,316
1973/1974	2,346,143	1,208	1,942	150	1,792

+ Includes tution fees only.
Source: Ngee Ann Technical College, Registrar's Office.

APPENDIX TABLE 14

PROFILE OF EMPLOYED NGEE ANN TECHNICAL GRADUATES, 1974

Degree	Mechanical Engineering	Electrical and Electronics Engineering	Business Studies	Total
1. EMPLOYMENT STATUS				
Working (full-time)	25	19	18	62
Not working but looking for a job	3	2	–	5
Full-Time National Service	12	8	1	21
Total	40	29	19	88
2. LENGTH OF TIME TAKEN TO FIND JOB				
Less than 1 month	10	12	4	26
1 – 3 months	12	6	12	30
4 – 5 months	3	1	2	6
Total	25	19	18	62
3. GROSS MONTHLY INCOME				
Less than $200	–	–	1	1
$200 – 299	–	–	3	3
$300 – 399	–	–	5	5
$400 – 499	9	1	7	17
$500 – 599	10	10	1	21
$600 – 699	6	2	1	9
$700 – 799	–	6	–	6

Source: Pang Eng Fong, *A Report of the 1974 Ngee Ann Technical College Graduate Employment Survey*, Economic Research Centre, April 1974.

APPENDIX TABLE 15

ENROLMENTS BY GRADE/LEVEL OF EDUCATION, 1971

LEVEL OF EDUCATION	Enrolment		
	Total	Male	Female
PRIMARY EDUCATION			
Standard 1	268,518	137,513	131,005
Standard 2	258,989	133,666	125,323
Standard 3	250,249	128,851	121,398
Standard 4	247,680	129,257	118,423
Standard 5	224,701	118,696	106,005
Standard 6	207,561	111,647	95,914
Sub-Total :	1,457,698	759,630	698,068
LOWER SECONDARY EDUCATION			
Remove Classes	47,786	28,038	19,748
Form I	131,018	76,442	54,576
Form II	121,809	70,899	50,910
Form III	102,878	60,030	42,848
Sub-Total :	403,491	235,409	168,082
UPPER SECONDARY EDUCATION			
Form IV Assisted Schools	48,936	28,799	20,137
* Secondary Technical Schools	857	831	26
+ Secondary Vocational Schools	1,676	1,169	507
Form V Assisted Schools	42,938	25,051	17,887
* Secondary Technical Schools	902	876	26
+ Secondary Vocational Schools	1,751	1,241	510
Sub-Total :	97,060	57,967	39,093
POST SECONDARY EDUCATION			
Form VI (Lower) Assisted Schools	6,196	3,747	2,449
** National Institute of Technology (Dip. 1st. Yr.)	439	382	57
MARA Institute of Technology (– do –)	913	558	355
College of Agriculture (– do –)	430	358	72
Ungku Omar Polytechnic (– do –)	332	267	65
Tunku Abdul Rahman College (– do –)	570	429	141
Teacher Training Institutions (1st Year)	1,050	535	515
Kolei Islam	401	253	148
Form VI (Upper) Assisted Schools	5,381	3,390	1,991
** National Institute of Technology (Dip. 2nd Yr.)	307	278	29
MARA Institute of Technology (– do –)	602	363	239
College of Agriculture (– do –)	188	154	34
Ungku Omar Polytechnic (– do –)	146	131	15
Tunku Abdul Rahman College. (– do –)	554	441	113
Teacher Training Institutions (2nd Year)	1,523	834	689

* Formerly known as Technical Institutes.

** Formerly known as Technical College.

+ Formerly known as Secondary Trade Schools.

Cont'd

LEVEL OF EDUCATION	Enrolment		
	Total	Male	Female
POST SECONDARY EDUCATION			
** National Institute of Technology (Dip. 3rd Yr.)	225	213	12
MARA Institute of Technology (– do –)	345	267	78
College of Agriculture (– do –)	175	148	27
Ungku Omar Polytechnic (– do –)	26	15	11
Teacher Training Institutions (3rd Year)	379	328	51
Sub-Total :	20,182	13,091	7,091
UNIVERSITY LEVEL EDUCATION			
University of Malaya	8,544	5,986	2,558
++ University of Science	681	460	221
Universiti Kebangsaan	576	411	165
National Institute of Technology (Prof. Course)	37	37	–
MARA Institute of Technology (– do –)	825	639	186
Sub-Total :	10,663	7,533	3,130
Grand Total :	1,989,094	1,073,630	915,464

** Formerly known as Technical College

++ Formerly known as University of Penang.

Source : The Ministry of Education, Malaysia, *Educational Statistics of Malaysia 1971*, Dewan Bahasa Pustaka, Kuala Lumpur, 1973, p. 5.

APPENDIX TABLE 16

DEVELOPMENTS IN THE EDUCATION SYSTEM, 1970-75

	Enrolments			Increase (%)	
	1970	1973	1975 (Target)	1970-73	1970-75
PRIMARY					
Peninsular Malaysia	1,421,469	1,531,493	1,605,000	7.7	12.9
Sabah	110,607	120,100	138,000	8.6	24.8
Sarawak	144,007	162,289	165,330	12.7	14.8
Total	1,676,083	1,813,882	1,908,330	8.2	13.9
(Percent of all levels)	75.4	71.9	69.0		
LOWER SECONDARY					
Peninsular Malaysia	378,535	469,116	537,000	23.9	41.9
Sabah	26,922	33,443	41,000	24.2	52.3
Sarawak	17,041	26,186	46,507	53.7	172.9
Total	422,498	528,745	624,507	25.1	47.8
(Percent of all levels)	19.0	21.0	22.6		
UPPER SECONDARY					
Arts and Science					
Peninsular Malaysia	84,925	115,289	140,000	35.8	64.9
Sabah	3,975	7,141	10,000	79.6	151.6
Sarawak	4,384	6,032	6,953	37.6	58.6
Vocational & Technical	4,981	9,066	24,540	82.0	392.7
Total	98,265	137,528	181,493	40.0	84.7
(Percent of all levels)	4.4	5.4	6.5		
POST SECONDARY (HSC)					
Peninsular Malaysia	10,619	13,728	16,000	29.3	50.7
Sabah	272	338	500	24.3	83.8
Sarawak	641	1,031	1,330	60.8	107.5
Total	11,532	15,097	17,830	30.9	54.6
(Percent of all levels)	0.5	0.6	0.6		
TEACHER TRAINING					
Primary	1,435	2,044	3,040	42.4	111.8
Secondary	1,123	2,030	2,400	80.8	113.7
Total	2,558	4,074	5,440	59.3	112.7
(Percent of all levels)	0.1	0.2	0.2		
College Level	3,830	7,531	10,273	96.6	168.2
(Percent of all levels)	0.2	0.3	0.4		
University Level	9,494	14,661	18,757	54.4	97.6
(Percent of all levels)	0.4	0.6	0.7		
Grand Total	2,224,260	2,521,518	2,766,630	13.4	24.4

Source: Government of Malaysia, *Mid-Term Review of the Second Malaysia Plan 1971-1975*, The Government Press, Kuala Lumpur, 1973, p. 185.

APPENDIX TABLE 17

UNIVERSITY OF MALAYA: STUDENT ENROLMENT, 1961-1973

Faculty \ Year	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73
Arts	556	723	908	1,188	1,496	1,836	2,132	2,332	2,823	3,265	3,578	3,443
Agriculture	53	74	99	123	154	185	202	237	274	324	383	417
Economics/ Administration	–	–	–	–	–	133	417	781	1,139	1,360	1,470	1,479
Education	–	–	34	88	150	191	215	330	320	442	524	603
Engineering	198	226	257	262	281	311	327	338	359	392	500	598
Medicine	–	–	40	102	186	277	389	510	568	631	654	658
Science	203	318	398	462	568	670	878	1,038	1,189	1,363	1,436	1,467

Source : University of Malaya *Annual Reports 1961/1962 – 1972/1973.*

APPENDIX TABLE 18

ENROLMENT OF STUDENT BY COURSE OF STUDY USM, 1969-1973

Course of Study \ Year	1969	1970	1971	1972	1973
Preliminary Science Course	–	–	–	90	90
School of Biological Science					
School of Chemical Science	57	128	405	570	613
School of Physics and Mathematics					
School of Applied Science	–	–	–	30	–
School of Building Science and Technology	–	–	–	30	189
School of Pharmaceautical Science	–	–	8	16	–
School of Social Science	124	122	344	490	690
School of Humanities					

Source : Budget Statement, 1969, 1970, 1971, 1972, 1973.

APPENDIX TABLE 19

AVERAGE UNIT COST PER STUDENT BY COURSE OF STUDY USM, 1969-1973

Course of Study \ Year	1969	1970	1971	1972	1973
Preliminary Science Course	–	–	–	–	9,009
School of Biological Science					
School of Chemical Science	9,221	8,281	7,585	9,502	9,009
School of Physics and Mathematics					
School of Applied Science	–	–	–	10,281	–
School of Building Science and Technology	–	–	–	10,281	9,009
School of Pharmaceautical Science	–	–	–	15,471	–
School of Social Science					
School of Humanities	5,727	5,679	5,943	5,598	5,547
Overall Average	–	–	7,495	8,241	6,639

Source : Budget Statement, 1969, 1970, 1971, 1972, 1973.

APPENDIX TABLE 20

STUDENT ENROLMENT AND AVERAGE UNIT COST PER STUDENT BY COURSES OF STUDIES UNIVERSITI KEBANGSAAN, 1970-1973

Year / Course of Studies	1970		1971		1972		1973	
	Number of Students	Average Unit Cost	Number of Students	Average Unit Cost	Number of Students	Average Unit Cost	Number of Students	Average Unit Cost
Science	37	7,705	109	17,090	210	19,030	325	17,510
Arts	116	2,130	365	6,440	640	5,600	980	5,520
Islamic Studies	37	2,149	98	6,040	230	4,200	395	4,260
Medicine	–	–	–	–	–	–	60	18,880
Total/Average	190	3,219	572	8,400	1,080	7,700	1,760	7,900

Source : Budget Statement 1971, 1972, 1973

APPENDIX TABLE 21

ENROLMENT AND AVERAGE UNIT COST (In M$) PER STUDENT FOR UNGKU OMAR POLY, MARA AND NIT, 1969-72

Year	Ungku Omar Poly		Institution		MARA	
	Enrolment	Average Unit Cost	Enrolment	Average Unit Cost	Enrolment	Average Unit Cost
1969	230	M$1650.00	913	2000	–	–
1970	428	1156	950	1137	–	–
1971	670	1941	1185	1844	2555	2954
1972	1000	1590	1280	1687	3729	2891
1973	–	–	–	–	4200	2500

Sources: For Ungku Omar and NIT, Budget Statement, 1969, 1970, 1971 and 1972;
For MARA, Director's Review, Institute Technology, MARA, July 1972 – June 1973.

APPENDIX TABLE 22

STUDENT ENROLMENT BY SCHOOL

	1971/1972	1972/1973	1973/1974
Accountancy	410	554	823
Administration and Law	473	518	321
Applied Sciences	255	361	487
Architecture, Planning and Surveying	285	248	377
Art and Design	–	264	284
Business and Management	475	504	752
Computer Science and Mathematics	158	147	187
Engineering	98	210	333
Hotel and Catering Management	–	219	338
Library Science	–	32	76
Mass Communication	–	40	72
Preparatory Studies	550	502	434
Total	2,802	3,598	4,684

Source: Director's Review, July 1972 to June 1973.

APPENDIX TABLE 23

EDUCATION EXPENDITURE IN WEST MALAYSIA IN RELATION TO OTHER MACRO-ECONOMIC DATA

Year	Population ('000) end of year estimate	National Income ($M)	GNP at Market Prices ($M)	Total Public Expenditure – ($M) (Ordinary expenditure at federal level only)	Total Educational Expenditure (Ordinary expenditure only ($M)	Total Educational Expenditure Per Capita ($)	Column (6) as % of Column (3)	Column (6) as % of Column (4)	Column (6) as % of Column (5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1960	7,018	4,399	5,636	856	165	23.5	3.8	2.9	19.3
1961	7,250	4,521	5,656	939	184	25.4	4.1	3.3	19.6
1962	7,494	4,795	5,978	1,003	219	29.2	4.6	3.7	21.8
1963	7,707	5,098	6,344	1,277	237	30.8	4.6	3.7	18.6
1964	7,923	5,461	6,774	1,503	257	32.4	4.7	3.8	17.1
1965	8,157	5,926	7,389	1,429	303	37.1	5.1	4.1	21.2
1966	8,415	6,195	7,761	1,533	320	38.0	5.2	4.1	20.9
1967	8,655	6,492	8,137	1,697	312	36.0	4.8	3.8	18.4
1968	8,899	–	8,413	1,683	359	40.3	–	4.3	21.3
1969	9,128	–	9,212	1,754	392	42.9	–	4.3	22.3
1970	–	–	9,804	1,998	425	–	–	4.3	21.3
1971	–	–	10,113	n.a.[R]	470*	–	–	4.6	–

[R] This is only available on a total Malaysian basis.
* Budget estimates.

Source : The Ministry of Education Malaysia, *Educational Statistics of Malaysia 1971,* Dewan Bahasa Pustaka, Kuala Lumpur, 1973, p. 66.

62

APPENDIX TABLE 24

OCCUPATIONAL STRUCTURE OF WEST MALAYSIA'S LABOUR FORCE IN 1957[1], 1967[2] and 1970

Occupation	1957		1967		1970	
	Nos.	%	Nos.	%	Nos.	%
1. Professional Technical and Related Workers	65673 (1.32)[3]	3.34	119085 (2.03)	5.47	129504 (2.08)	5.16
2. Administrative, Executive and Related Workers	30740	1.56	37444	1.72	41299	1.65
3. Clerical and Related Workers	61537	3.13	96036	4.41	106493	4.24
4. Sales Workers	182266	9.28	222443	10.21	237849	9.48
5. Agricultural, Fishery & Forestry and Related Workers	1193390	60.77	1176330	53.98	1309558	52.18
6. Miners and Quarrymen	5531	0.28	22817	1.05	35609	1.42
7. Workers in Transport & Communication Occupations	66845	3.40	85114	3.91	99775	3.98
8. Craftsmen, Production Process Workers	211119	10.75	253988	11.61	326697	13.02
9. Workers in Service, Sport & Recreation Occupation	146792	7.47	165781	7.61	222754	8.88
Total	1963893	99.98%	2179038	99.97%	2509538	100.00

Notes:

[1]The above data exclude 200968 persons in 1957 who belonged to the following categories;

a) Labourers n.e.c. (except agricultural labourers)
b) Members of the Armed Forces
c) Workers not classifiable by Occupations
d) Persons not working but looking for jobs.

[2]The above data exclude 186,470 persons in 1967 who belonged to the following categories;

a) Millers, bakers, brecomasters, chemical and related process workers and labourers n.e.c. (83,841)
b) Members of the armed forces
c) Those with occupations not specified.

[3]Nos. in parenthesis exclude teachers from the Professional, Technical and Related Workers category.

[4]Occupation of a person in 1957 was ascertained by the kind of work or nature of duties on which the person enumerated has spent most of his time in the preceding twelve months. The census date was midnight of 17/18 June 1957. In the 1967/68 Household Survey the occupation was ascertained by the exact type of work done by a person within the establishment in which he was working at the time of survey. The field work for the survey was carried out between June 1, 1967 and May 31, 1968.

Source: 1957 – H. Fell, 1957 Population Census of the Federation of Malaya, Department of Statistics, Kuala Lumpur, Table 14.

1967/1968 – N.S. Choudhty, Socio – Economic Survey of Households, Malaysia 1967/68. Department of Statistics, Kuala Lumpur, 1970, Table 28.

1970 – Compiled from the unpublished data sheets, Population Census of Malaysia, 1970, Department of Statistics, Kuala Lumpur.

APPENDIX TABLE 25

MALES AGED 15-16 BY EDUCATION LEVEL AND EMPLOYMENT STATUS: MALAYSIA (WEST), 1968

Educational Category	Percentage of that category (excluding those still students) who are		
	Not Working and Seeking Work ("Unemployed")	Not Working but Not Seeking Work*	Total Not Working
None	3.1	26.0	29.1
Primary	6.1	16.2	22.3
Lower Secondary	15.4	5.7	21.1
Middle Secondary	15.7	2.5	18.2
Upper Secondary	12.0	4.2	16.2
University	3.1	4.8	7.9

Source: Calculation from A.B. Wilson, "General education and unemployment in Malaysia", *Journal Pendidikan,* Vol. 3, October 1972.

* Including the disabled, those who were not working because it was the off-season, etc.

HIGHER EDUCATION AND ECONOMIC GROWTH IN THAILAND

by

Niphon Kantasewi*

I. HISTORICAL BACKGROUND

1. A Brief Description of the History and Growth of Higher Education[1]

In 1852, the first secular school for Thai children was established in Bangkok. It was operated by the American Presbyterian Mission. Twelve years later another school was set up in Petchaburi in the east, and a third was founded in Chiengmai in the north. It was not until 1883, or about 31 years after the first school was founded by the American Missionaries, that King Rama V established the first public school entirely run by Thai administrators. In 1887 the Royal Department of Education was established to provide mass education at the primary level throughout the Kingdom. Thus far, education in Thailand was conducted solely for literacy purposes.

The first school of medicine was established in Bangkok in 1889. Three years later the first teachers' training school came into existence. The year 1897 saw two important happenings: the first scholarship fund was set up for Thai students to study abroad in civil service administration, and the first law school was founded, under the Ministry of Justice. Five years later the Royal Pages' School was set up to train selected young men to be government officials. This school was later expanded and became the first university of the Kingdom, Chulalongkorn University, in 1916.

It should be noted that from 1889 until 1916, professional schools had been set up for higher class youth. The concept of providing vocational education for lower class young people was not realized until 1919, when vocational schools were first founded.

During the decade of 1933-43 four universities, Thammasat, Patayasart, Kasetsart, and Silpakorn, were established to provide professional education at the higher level in law and political science, medical sciences, agricultural sciences, and fine arts.

In 1952 a series of technical colleges were set up by the Ministry of Education. The first was in Bangkok and the others in the various regions of the country. They provided technical training at the middle level in electrical engineering, electronics, construction, automatic mechanics, business administration, and home economics. By that time several agricultural schools at the high-school level had already been established in major provinces to supply manpower in farming for private sectors and government agencies.

In 1954 the College of Education was established within the Ministry of Education. It was the first degree-granting college in Thailand, independent of a university, and organized on a much lower basis. Its curriculum consisted of a strong liberal arts programme, which branched out into both the academic and the professional education areas in the upper years. The College was mainly concerned with the teaching profession. It also gave prominence to educational research and educational administration for the first time in the history of Thailand.

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*Dr. Niphon Kantasewi is Dean of the Faculty of Social Sciences, Kasetsart University, Bangkok, Thailand.

[1]See (1) Sukich Nimmahemінda, 'Higher Education in Thailand', *Journal of the National Education Council*, January 1970, and (2) Sunt Techakumpuch, Thai Universities — A Glimpse at Some of the Issues, in *Development of Higher Education in Southeast Asia: Problems and Issues*, RIHED, Singapore, 1972.

1961 was the year when Thailand began its first Five-Year Economic Plan. Three provincial universities, Chiengmai University in the north, Khon Kaen University in the northeast, the Prince of Songkhla University in the south, and the College of Education, were established with the aim of promoting regional social and economic development through higher education.

Toward the end of the 'sixties, a unique institution of higher learning, the National Institute of Development Administration, was founded. It was intended to be a postgraduate school for administration in national development, aimed at improving the efficiency of government officials at higher levels for effective implementation of the national economic development programme. Concurrently, the Ministry of Education promoted the status of the College of Design and Construction to university level, and changed its name to King Mongkut's Institute of Technology.

In 1969 a law was passed to permit the establishment of private colleges which were to be degree-granting and totally operated by private individuals. These private colleges are understandably limited in scope and primarily organize their curricula in specific fields of industrial and business technology.

In 1971 the concept of an 'open' university system made its public debut. (The idea of the so-called scholastic market place was not entirely new, however, for a somewhat similar situation was once present at Thammasat University during its early days). This is another example of the co-evolution of higher education and politics in Thailand. The result was Ramkhamhaeng University, with an initial enrolment of approximately 4,000 students. Its present curriculum offerings are limited to social sciences and related professional training. The estimated total enrolment at present is 60,000.

At present there are 12 state-supported degree-granting institutions, four armed forces academies (police, army, air force, and navy) and six private colleges with a total number of 100,000 students. An international postgraduate engineering school, the Asian Institute of Technology (formerly known as SEATO Graduate School of Engineering), is located near Don Muang Airport, Bangkok.

The following brief listing of some of the data gathered by the Office of the National Education Council for the 1972 academic year comprises some general background picture of higher education in Thailand today. The National Education Council's survey did not include Ramkhamhaeng University or the private colleges.

Enrolment and Staffing[2]

In 1973 there were 72,030 undergraduate students enroled in the institutions covered in the survey, out of a total eligible population of 40 million, in the ratio of three males to two females. The teaching staff in these institutions consisted of 6,986 full-time instructors, giving a ratio 1:10 for full-time staff to students, and an additional 1,634 part-time instructors.

The total budget provided by the government was 870 million bahts (approximately 20 bahts = 1 US dollar), representing about three per cent of the total national budget.

[2]See *Educational Report: Institutions of Higher Education, Thailand, 1973* published by the Office of the National Education Council, Bangkok, 1975.

Enrolment by Degree Level

Undergraduate	72,030
Master's degree	5,712
Higher professional certificate	798
Doctoral candidates	33

The distribution of students in the various fields of study, based on the UNESCO classification, was, in decreasing order: education, 32.1 per cent; social sciences, 17.3 per cent; medical sciences, 10.6 per cent; engineering, 9.6 per cent; humanities, 8.1 per cent; natural sciences, 7.1 per cent; law, 5.7 per cent; agricultural sciences, 4.9 per cent; military and police, 3.1 per cent; and fine arts, 1.4 per cent.

The average tuition fee is about 1,000 bahts per annum, whereas the universities' annual operational cost is approximately 8,500 bahts per student.

Of the 870 million bahts budget, 38.9 per cent was for salaries, wages and the other remuneration, 28.9 per cent for construction, 21.9 per cent for equipment, materials and supplies, and 10.3 per cent for other expenses. The total revenue earned from fees, donations and the like, amounted to 53 million bahts. Research work by university staff called for 21 million bahts for the 1970 academic year, representing about 2.5 per cent of the total university budget.

According to 1972 statistics, the largest proportion of students in the total educational picture was in primary school. This amounted to 84.66 per cent of all students at all levels. Students in institutions of higher learning constituted only 1.27 per cent. Nevertheless, the annual budget for higher education took 14.41 per cent from the total national budget for education at all levels.

It should be noted, in conclusion, that higher education in Thailand since its inception has been directly associated with some phase of national development. When it first came into existence both in the days of King Chulalongkorn (Rama V) and King Vajiravuch (Rama VI), higher education was meant to produce men to serve in the civil service of a developing nation. Today, in the area of economic and social development, higher education has been called upon to play a more essential and active role. Among other things, professional men in various fields of study are being prepared to satisfy the manpower requirements of the National Plan for Economic and Social Development.

2. A Brief Outline of Economic Development in Thailand since 1950[3]

Prior to 1961, when Thailand for the first time inaugurated a comprehensive five-year national economic plan, government administration had been conducted on the basis of a single bookkeeping system on a year-by-year basis. Unexpected demands for recovery, improvement, and expansion in the social and economic life of the country after the Second World War necessitated the government spending more money than previously appropriated. A special budget was set up by the legislature which empowered the Prime Minister to appropriate funds whenever necessary. Consequently the budget increased tremendously from year to year, creating an ever greater deficit in the national financial situation. These stop-gap

[3]See (1) James C. Ingram, *Economic Change in Thailand*, 1850-1970, Stanford University Press, Stanford, California, 1971 and (2) Bank of Thailand, *Annual Economic Report*, various issues.

measures taken to solve the problem were rendered insignificant by inflation. Inefficiency and corrupt practices in public and private sectors were more apparent as a consequence, and dissatisfaction among people in all walks of life inevitably led to the 1958 coup d'etat. The new government set out to reform the nation's economic and financial policies as its first priority. The National Budget Office and the National Economic Development Board were concurrently established under the Office of the Prime Minister.

From 1951 to 1969 the gross national product in constant (1962) prices rose from 35.2 billion bahts to 112.4 billion bahts, for a remarkably high cumulative growth rate of 6.6 per cent per year. On current prices, GNP rose from 29.8 billion bahts to 130.8 billion bahts, yielding a cumulative growth rate of 8.5 per cent. These culculations imply an annual average price rise of 1.9 per cent which is probably one of the lowest rates in the world in this inflationary period (See Table 1). The rise in the rate of growth of GNP preceded the American military presence in Thailand by several years, although the very high rates in 1966-71 were certainly affected by this build-up.

According to official estimates, population has grown since 1950 at the rate of 3.1 per cent per year, rising from 20.2 million in 1951 to 34.7 million in 1969. On the basis of these estimates, GNP per capita in constant (1962) prices rose from 1,743 bahts in 1951 to 3,239 bahts in 1969, with most of the increases occurring in the second part of the period, 1959 to 1969. (Annual figures for population and per capita GNP are also presented in Table 1). These data show that increases in income have exceeded population growth by a margin sufficient enough to permit a substantial rise in real income per capita.

The data on GDP indicates that substantial structural changes have occurred since 1951. (The figures for selected years are presented in Table 2). The sectors that have grown most rapidly are construction, transportation and communication, manufacturing, electricity, services, and finance (banking, insurance, and real estate). Lower rates of growth have prevailed in agriculture, mining, and trade. In terms of percentage shares, the most striking change has been a decline in the share of agriculture and a rise in the share of industry.

The decline in agriculture is particularly striking because Thailand still appears to be primarily an agricultural country. Exports are almost entirely agricultural and about 70 per cent of the labour force is employed in agriculture. (See Table 3). Income per capita based on 1968 data in non-agricultural activities is 8.7 times as large as income per capita in agriculture. The rising share of industry in GNP reflects the greater emphasis that has been placed on social overhead facilities, involving heavy investment outlays, an expanding construction industry, and promotion of manufacturing industry.

Looking at the employment and labour situations (Table 3), it is interesting to note that the percentage of the labour force in agricultural fields has been declining as compared with that in the fields of industry and public utilities. This, in part, may have accounted for the decrease in the percentage of contribution from agricultural and related sectors. It is a common sign of gradual industrialization in a developing agricultural country.

TABLE 1

GROSS NATIONAL PRODUCT AND POPULATION, 1951-1973

Year	Gross National Product (฿ Billions)				Population (Millions)	GNP Per Capita	
	In Current Prices		In Constant Prices			1962 Prices (Baht)	Current Prices (Baht)
	Estimates		Estimates				
	Official	Adjusted	Official	Adjusted			
1951	28.2	29.8	33.5	35.2	20.2	1,743	1,475
1952	29.5	31.1	35.4	37.1	20.8	1,784	1,495
1953	32.2	34.0	39.5	41.5	21.5	1,930	1,581
1954	32.0	33.7	39.2	41.0	22.1	1,855	1,525
1955	39.3	41.6	43.2	45.6	22.8	2,000	1,825
1956	40.9	42.9	44.4	46.5	23.4	1,987	1,833
1957	45.2	45.2	48.2	48.2	24.1	2,000	1,876
1958	47.0	47.0	48.6	48.6	24.9	1,952	1,888
1959	50.3	50.3	53.6	53.6	25.6	2,095	1,965
1960	53.9	53.9	56.0	56.0	26.4	2,121	2,042
1961	58.9	58.9	58.9	58.9	27.2	2,165	2,165
1962	63.7	63.7	63.7	63.7	28.1	2,267	2,267
1963	68.0	68.0	69.1	69.1	28.9	2,391	2,353
1964	74.6	74.6	73.6	73.6	29.8	2,470	2,503
1965	84.3	84.3	79.5	79.5	30.7	2,590	2,746
1966	101.3	101.3	89.1	89.1	31.7	2,811	3,196
1967	108.4	108.4	94.2	94.2	32.7	2,881	3,315
1968	—	—	—	—	—	—	—
1969	130.8	130.8	112.4	112.4	34.7	3,239	3,769
1970	136.3	136.3	120.7	120.7	35.8	—	3,807
1971	144.6	144.6	127.7	127.7	37.2	—	3,887
1972	160.2	160.2	131.6	131.6	38.8	—	4,128
1973	187.7	187.7	143.1	143.1	39.8	—	4,726

Sources: GNP, 1951-1973, National Income of Thailand, NEDB, National Income Statistics of Thailand, 1951-1973, NEDB, Population, 1951-1973, National Statistical Office, National Accounts Division, Office of the National Economic and Social Development Board, 1972-1973, Budget Bureau, Office of the Prime Minister for 1974.

TABLE 2

GROSS DOMESTIC PRODUCT BY INDUSTRIAL ORIGIN

Industrial Origin	1951	1955	1960	1965	1968	1969	1970	1973
	A. Value-Billions of Baht at Current Prices							
Agriculture	14.1	12.9	21.5	29.1	37.0	41.7*	37.8	57.4
Industry	3.1	5.2	7.4	13.8	19.7	22.6	23.2	35.2
Construction	0.8	1.6	2.5	4.7	8.2	8.2	6.3	9.5
Public Utilities & Services	0.9	2.1	4.2	6.7	8.6	9.0	10.2	13.8
Trade	5.1	7.7	8.2	13.9	20.3	22.4	25.9	32.7
Others	5.2	9.9	10.2	15.8	23.5	25.9	31.6	38.7
GDP	29.2	39.4	54.0	84.3	117.3	129.8	135.0	187.3
	B. Percentage							
Agriculture	50.1	42.0	39.8	34.9	35.5	31.4	28.5	30.5
Industry	12.2	13.4	13.7	16.3	16.8	17.6	17.1	18.8
Construction	2.9	4.0	4.6	5.6	7.0	6.0	4.6	5.1
Public Utilities & Services	3.2	5.3	7.9	7.9	7.3	7.0	7.5	7.4
Trade	18.0	19.6	15.2	16.5	17.3	17.5	19.1	17.4
Others	13.6	15.7	16.8	18.8	14.1	20.5	23.2	20.6
GDP	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: GNP, 1951-1973, National Income of Thailand, NEDB, National Income Statistics of Thailand, 1951-1973, NEDB, Population, 1951-1973, National Statistical Office, National Accounts Division, Office of the National Economic and Social Development Board, 1972-1973, Budget Bureau, Office of the Prime Minister for 1974.

TABLE 3

EMPLOYMENT AND LABOUR BY INDUSTRIES, 1960-1973 (IN PERCENTAGE)

Industries	1960	1970	1971	1972	1973
Agriculture	82.30	79.30	74.30	66.63	67.25
Industry & Construction	4.30	5.70	8.20	12.70	11.75
Commerce	5.60	5.30	8.10	9.10	9.66
Public Utilities & Services	6.10	8.90	9.30	11.34	11.30
Others	1.70	0.80	0.10	0.23	0.04
TOTAL	100.00	100.00	100.00	100.00	100.00

Sources: Final Reports of the Labour Force Survey, National Statistical Office, Office of the Prime Minister, 1960-1973.

II. DETERMINANTS OF UNIVERSITY GROWTH

Education as a social institution exists in accordance with the needs or demands of the society or the people of the country. It is generally accepted that role expectations of education are three-fold. Education is a means of upward social mobility, a status symbol, and an instrument for national, social and economic development. It is also universally assumed that the higher the level of education, the more effectively it performs its various roles. The differences among the levels of education are mostly breadth, depth, and complexity.

In non-dictatorial societies, education is usually provided for people on popular demand, according to whatever roles the majority or more influential groups may expect. The kind of education conducted essentially reflects individual social values and cultural characteristics. In most cases these factors are interrelated and interact with changing social, political, and economic situations in the country. Thailand's higher education has probably been the most striking expression of such values and characteristics, especially during the last century.

Thailand's first institution of higher learning, the Royal School of Medicine at Siriraj (now a Faculty of Medicine of Mahidol University), was established in 1889 with the aim of training professional physicians to cope with acute health problems.

Chulalongkorn University, founded in 1910, became the first Thai university in the universal sense in 1917. The growth of this university apparently coincided with steps then being taken to modernize the government by providing training in civil service, engineering, sciences, and arts.

In 1932 a group of civilian officials and military officers successfully challenged the powers of the monarch and his royalist-dominated government. Their broad

political goal was to transform the structure of government from that of an absolute monarchy to one in which the monarch's role was defined and limited by a constitution.[4] To further this trend towards democratization, the new government supported the effort of the more liberal elements in the 'coup group' to establish an institution of higher education that would both be open to people from all walks of life, and educate its students in the concepts and tradition of liberal democracy. As a result, in 1933 the University of Moral and Political Science (now known as Thammasat University) was established as an open-admission university offering courses in social sciences, particularly law and political science. Enrolment was approximately 10,000 to 20,000 students annually, mostly composed of working people employed in various government agencies throughout the country, including primary school teachers from some remote border provinces. This type of higher education was wholeheartedly welcomed by the general public. It seemed to satisfy their desire for an educational means of individual social promotion, and at the same time it helped build up a large number of political cadres and public servants for a fast expanding bureaucracy. The university was renamed Thammasat University in 1950, and a few years later changed its policy to a closed-admission model.

The establishment of Kasetsart University and Mahidol University in the early forties aimed at providing the government with personnel trained to high levels of competency in the agricultural and medical sciences respectively.

It was during this period that Pibulsongram's regime set out to campaign for nationalism among the complacent and easy-going Thai populace. There was vast reorganization and reform in almost every aspect of the society. The national language and curricula, especially the course content of Thai history, were revised to be more nationalistic and to arouse patriotism. Cultural identity and heritage were rediscovered, lauded, and became sources of great pride. The founding of Silpakorn University and the Ministry of Culture has confirmed the government's interest in and awareness of the value of cultural preservation and enrichment.

Soon after World War II, as mass media and transportation facilities were developed to rapidly increased levels of efficiency, world culture became homogenized. Thailand shifted her attitudes from hermetic individualism toward internationalism, and was forced to modernize after the patterns of Western civilization, particularly that of the United States. Private industry began to express demands for experts in many types of technology, and government agencies requested specialists in practically all fields, ranging from livestock and crop production to public administration. The Sarit Government, after taking over in 1958, became aware of the need for centrally planned economic development for the whole country. The lack of such planning had resulted in chaos during the previous regime of Marshal Pibulsongram. The new government was determined to avoid such disasters. As a consequence, great changes in economic and political administration came about, including a series of five-year economic and social development plans.

The university educational system as it stood was obsolete and needed thorough reorganization. Prior to the Second World War, the university system

[1] Sathien Suphasophon, *Thai History*, Aksorncharoentat Press, Bangkok, Thailand, 1965, pp. 288-289. [2] *The Preamble to the First Thai Constitution*, promulgated June 27, 1932. [3] Wendell Blanchard, *Thailand, Its People, Its Society, Its Culture*, HRAF Press, New Haven, Connecticut, 1966, p. 155.

functioned as a training ground for government personnel according to old aristocratic concepts of civil service. During this period, the various universities were given impetus and opportunities to renovate their curricula and study programmes. New courses in wider disciplines were set up and incorporated in the revised curricula. A wide range of applied science programmes were instituted. More teaching and non-teaching staff members with differing qualifications were recruited to fill the new positions. New departments, faculties, and in some cases, new universities were set up. The Southeast Asian Graduate School of Engineering, at the time affiliated with Chulalongkorn University, had by now developed into the Asian Institute of Technology, encompassing much wider fields of applied sciences, including special programmes in urban development and social planning. The Institute of Public Administration at Thammasat was enlarged and promoted into a separate university, and it moved out to grow and develop on its own. Now called the National Institute of Development Administration, its primary aim is to promote graduate studies in public administration for economic and social development.

In the health sciences, there has been a serious shortage of physicians and nurses outside metropolitan areas. Besides the brain drain to the United States, doctors and nurses are not willing to sacrifice their personal comforts and the conveniences of their families by taking up assignments in the underdeveloped upcountry regions. Heretofore, the government had offered no solution to the shortage problem other than urging the unviersities to produce more health personnel. When three more universities were established during 1964-68 to serve the upcountry regions, medical schools were set up along with other faculties. At the same time, Patayasart University (the University of Medical Science) was reorganized. In the new structure the institution comprises the old Siriraj Medical School, the School of Public Health, the Faculty of Basic Medical Sciences, the Faculty of Medical Technology, the Faculty of Social Sciences and Humanities, the Faculty of Tropical Medicine, the Faculty of Public Health, the Faculty of Dentistry, the Faculty of Pharmacy, Ramathibodi Medical School, and the Faculty of Nursing.

As early as the beginning of the century, Chulalongkorn University had established the faculties of Arts and Political Sciences, which included social psychology, sociology, and anthropology. Though the government had been aware of the importance of social sciences and humanities disciplines, very little attention had been given them. In the early 'sixties, partly due to recommendations from certain foreign advisors who came to evaluate administration and investment in higher education, the universities began to set up courses and added them to many curricula. The breadth-and-depth concept to counteract the traditional narrow specialization gained more momentum in the mid 'sixties. Kasetsart University was probably the first institution in Thailand that included English, sociology, and economics in all major curricula, and introduced cross-registration among the various faculties within the university. There was widespread desire to develop truly full-fledged universities. Curricula were balanced in hopes of better equipping students to deal with changing economic and social world situations. As a consequence, not only curricula were internally reorganized, departments of social sciences and humanities were set up in established institutions as well as at new universities. These measures served to promote effective teaching and research services and enhanced the role of the university in the economic development of the country.

Due to social demands for more seats in institutions of higher learning, and rapid expansion of business and industry, private colleges were given permission

to provide professional training in accountancy, secretarial skills, and business administration.

Along with modernization, population growth in Thailand had been increasing at the rate of 3.2 per cent annually since 1950. In spite of rapid increase in the number of vocational schools and technical colleges provided by the Ministry of Education, tens of thousands of high school graduates had not been absorbed. A large proportion of these young people had their eyes on the university of their choice. There were certainly not enough places in the state universities and colleges, and many of those who were seeking higher education could not afford to make use of the increasing numbers of private colleges which had to charge high fees in order to stay in business. Twenty to thirty thousand high school graduates had been turned down every year at the university entrance examination until 1971, when Ramkhamhaeng University, with an open-admission policy, was established. Anyone with a diploma of higher school education or its equivalent could gain admission to Ramkhamhaeng. It was, in a way, a response to the demand of people hungry for university education. It responded to those, who, for financial, geographic, or academic reasons, had no access to the country's highly selective universities. Working professional people, now given the 'second chance' are able to update their knowledge and increase their competency without interrupting their work schedules, and to promote their upward social mobility or at least, increase their social status. The university's first enrolment was 37,198, composed of students with ages ranging from 17 to 71, and academic background from high school equivalence to doctorate, with occupations varying from janitors to military generals and top business executives.

Conclusions

Thus as seen from the very beginning, all institutions of higher learning in Thailand were initiated by the government or the ruling elite, whose experience and education from abroad led them to realize the need for universities to be established with the aim of producing graduates who could be placed either in the various government agencies in the fields of agriculture, industry, health, education, or in other government services.

Education breeds further needs for more and higher education. As in any democratic society, the Thai people have been voicing their demand for education for their children that would help them attain better living. Applications for entrance to the universities have been increasing with the rising number of high school graduates. The number seems to be escalating much faster than the availability of places in the universities. Establishment of private colleges was thus a result of the social demand for higher education. Ramkhamhaeng University was pressured into existence and into operating as an open-admission system. The universities were compelled to admit new students and produce graduates in spite of the fact that new positions in the various government agencies were proportionally less available. Consequently many universities graduates were turned down by the government. The private sector played more an active role in absorbing the highly educated manpower.

The third impetus to the growth of higher education in Thailand is the academicians themselves who, with the experience and better social perspective gained through overseas studies, saw the need to improve the education of the country's future leaders, as well as the importance of a balanced education to enable the future leadership to meet the needs of the changing society. These academicians

are constantly proposing new course offerings, establishing new departments, faculties, and even new universities.

III. THE EFFECTS OF THE GROWTH OF HIGHER EDUCATION

As already stated, the university system in Thailand has grown tremendously during the last decade. Table 4 shows that student enrolment has increased from 26,823 in 1964 to 63,820 in 1972. The number of institutions has increased almost 100 per cent, and the number of faculty members has grown by about 140 per cent. The cost per student to the government increased only slightly, i.e., from 16,570 bahts to 18,000 bahts, whereas the cost shouldered by the student increased from 558 bahts to 848 bahts per student, or about 40 per cent higher over the same period. The ratio of cost shared by private individuals and the public changed from 1:30 to 1:21. The increase in annual budgets allocated to the universities was from 473.3 million bahts in 1967 to 747 million bahts in 1972, which is about 70 per cent. Meanwhile the teacher-student ratio was up from 1:10 to 1:8.

1. Change Within the Higher Educational System

1.1 Academic Standards

It has been felt among educators and the general public that while there has been a high rate of university growth in Thailand, there has also been a noticeable decline in the quality of the graduates. Several factors have led to this unfavourable situation. While the number of places in the universities have increased, standards of primary and secondary education in general have deteriorated. Hence, even though students are less qualified for higher education, they are absorbed into the universities in greater numbers in spite of competitive entrance examinations, simply because the universities have places for them. Another factor is that today's students are no longer sure that they will either be absorbed into the prestigious civil service positions that once went hand in hand with a university degree, or, for that matter, that they will be able to find any suitable job at all. Consequently the students go through their college life with less motivation to learn than did the students in the past.

The fact is that there are not enough job opportunities for all university graduates either in the government or in private circles. This is not because Thailand has so developed that its job market is saturated. In fact, there is a great need for skilled high-level manpower in many fields. Rather, the country's political atmosphere, as manifested in the government administration, has not been conducive to investment in industries that would maximize the use of local human resources in professional and creative roles. Government officials' misuse and abuse of power under one regime after another have virtually aborted most of the local potentialities. The fact that social and economic prosperity flourished only in a few major cities attests to certain fallacies in the government administration, namely, the lack of political consciousness and sincerity to fellow countrymen. One example should be given here. Since the establishment of Kasetsart University, the oldest institution of higher learning in agricultural sciences in Thailand, less than one per cent of its graduates from the College of Agriculture have been actively engaged in private farming enterprise. Until about five years ago, most of the university's graduates had been employed by the various government agencies responsible for rural or agriculture development. During the last decade there has been a noticeable decline in the number of available positions in these agencies. More of the

TABLE 4

CHANGE IN HIGHER EDUCATION SYSTEM

	1967	1968	1969	1970	1971	1972
Institutions	12	13	13	13	13	13
Enrolment	35,688	38,915	41,984	51,238	59,453	63,820
Graduates	4,785	5,175	5,691	7,500	9,805	20,965
Staff (Full-time)	2,623	3,155	3,763	4,102	5,119	5,532
Budget (mil.)	473.3	602.4	605.6	688.5	778.1	747.0
Cost/student	16,570	20,000	17,794	18,900	19,300	18,000
Share of Private Burden/ Student	558	700	742	768	813	848
Private: Public	1:30	1:28	1:27	1:24	1:23	1:21
Teacher/ Students	1:11	1:10	1:10	1:9	1:9	1:8

Sources: Educational Reports, Institutions of Higher Education in Thailand 1967-1972, Office of the National Education Commission, Office of the Prime Minister.

graduates should have entered private businesses or agro-business, in the fields of their training. It has been revealed that practically none of them, even those whose families were engaged in farming, have taken up agriculture as their career. The same is true with most other occupations and professions. Only graduates in a few fields, particularly medical sciences, can find themselves well-paid jobs in the labour market for which they were trained. In other fields, the students do not usually feel confident about their career opportunities and thus lose interest and motivation in the academic work.

Academic standards are in general affected by various interrelated factors, namely, the teachers, teaching methods, teaching materials, and institutional systems. It is quite obvious that the quantitative growth in higher education has not been in satisfactory proportion to its qualitative development. The former has been accelerated much faster than the latter. It can be said that growth and expansion of higher education in this country have not been based on systematic planning, preparation, and implementation. As expansion of the university system has been encouraged the above-mentioned factors affecting the academic standards remained relatively unimproved.

1.2 Growth of Liberal Arts Education

Another dimension of the growth in the higher education system besides the quantitative aspect is the variety of course offerings in the university curricula. During the last decade, the university curricula in Thailand have been undergoing revisions to include more courses in basic or general education. Study in the natural sciences, social sciences, and humanities, now complement professional training, whereas in the past the curricula were narrowly specialized. At present, at least the first year of study is entirely devoted to basic general education preparation. At some universities, the students are allowed to choose a specialized field of study after the third semester. Students in agricultural sciences, engineering, and medicine now have an opportunity to take courses in disciplines to which they never before would have been exposed. They have become more interested in social and community affairs, natural environmental problems, and political issues. It is believed that students and graduates in recent years have a better sense of social responsibilities and political consciousness. It is interesting to note also that students when given an opportunity to choose free electives, select more courses outside their fields of specialization. Social sciences and humanities are particularly popular elective studies. An increasing number of students now actively participate in community development projects, both of their own design or with concerned government agencies.

2. The Impact of Higher Education on the Graduate Employment Profile[5]

2.1 Current Employment Trends

University graduates enter into the labour force every year in small number compared with those in other educational levels. The Population Censuses of 1960 and 1970[6] show that in 1960 the number of university graduates constituted 0.5 per cent of the total population. In 1970 the percentage increased to 0.7.

[5]The figures appearing in this section, unless otherwise indicated, are taken from Nikom Chandravithun's 'Employment of University Graduates — Thailand's Experience', presented at the RIHED's Regional Seminar in Higher Education and Manpower Requirements, Vientiane, Laos, December 1974.

[6]*Population Census, 1960-70*, Office of National Statistics, Office of the Prime Minister, Bangkok, Thailand.

The number of university graduates entering the labour market has been increasing every year. There has been an increase in the demand and supply situation for positions available in various institutions, and greater job opportunities in both government and private sector in recent years. According to the Labour Force Survey of 1972[7], 79,200 university graduates, or 0.5 per cent of the total employed manpower, were engaged in the labour force, whereas in 1969 the number was 64,400. This source estimates that in 1973 there will be 94,000 and the number will increase to 112,000 in 1974.

According to the same survey, 96 per cent of all university graduates were employed. Of this number, 90 per cent had not been previously engaged in any employment. Most of them spent from one to three months before they could secure a job.

Of these who found jobs, 96 per cent did so in the urban sector. This is mainly due to greater job opportunities and better living conditions in cities than in rural areas. According to the survey, the Bangkok Metropolis alone employed 77 per cent of all the university graduates in the labour force.

As for sources of employment, Nikom Chandravithun, Director-General of the Labour Department and Secretary-General of the National Manpower Board has said: 'Even though there is no definite statistical information to substantiate it, it is believed that presently there are more university graduates in the government service than in the private sector, despite the fact that the latter offers higher earnings and income'.[8] He bases this contention on the following. First, there has been more demand for and job opportunities in the government sector. Secondly, it is a traditional Thai belief that government officials have a higher social status than non-government workers.[9] Finally, economic security in government employment is greater than in the private sector.

In the private sector, considering the types of work, the survey shows that most university graduates (63.6 per cent) are engaged in industrial services. The second highest group is in commerce, 20.6 per cent; 5.4 per cent are in manufacturing; 3.7 per cent in transportation and communication; 3.5 per cent in public utilities and health; 2.1 per cent in construction; 1 per cent in mining and 0.1 per cent in agriculture.

In terms of occupation, most of the employed university graduates (41.8 per cent) were in technical and professional fields. The next highest were in the fields of administration and public services, and they constituted 32.2 per cent; in clerical work 15.2 per cent, in transportation and communication, 0.4 per cent; and in agriculture, 0.1 per cent.

The number of university graduates employed in technical and professional fields has increased rapidly during recent years. In 1969 there were 26,000 graduates in these fields whereas in 1971 the number increased to 33,810. The number of graduates engaged in administration and management also increased from 23,000 in 1969 to 26,760 in 1972. These data should indicate that more administrative and managerial positions are occupied by university graduates.

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[7] *Labour Force Survey*, Office of National Statistics, Office of the Prime Minister, Bangkok, Thailand, (1969-72).

[8] *Op. cit.*, p. 11.

[9] Paitoon Kruekeaw, *The Thai Society and Culture* (in Thai), Guegul Publishing Co., Bangkok, Thailand, 1963, p. 2/21-23, 5/4-16.

Likewise, the number of graduates engaged in clerical work has increased almost twice, 4,300 in 1969 to 7,700 in 1972. There are two possible explanations for this situation. Some graduates accept clerical positions which are lower than their educational qualification because immediately after graduation, there might not be suitable and satisfying jobs available to them. Also the salaries of clerical workers in certain big organizations may be much higher and thus more attractive than some higher positions in certain government circles.

In the public sector, graduates in social sciences occupy most of the positions. 26.6 per cent of all the civil servants hold a bachelor's degree or higher. The next highest is the field of medical sciences, 20 per cent. The rest are in declining order: agricultural sciences, 12.8 per cent; law, 10.9 per cent; engineering and natural sciences, 9 per cent each; education and humanities, 4 per cent each; arts, 1.7 per cent; police and military sciences, 0.4 per cent; and others, 1.6 per cent.

However, in the private sector, the fields of engineering and natural sciences lead the list and are closely followed by the social sciences.

2.2 **Nature of Unemployment**

Compared to non-graduates, the unemployment rate among graduates is small, there being only 3 per cent unemployed in 1972. In 1969 there were 2 per cent unemployed, whereas in 1971 the number increased to 2.7 per cent. Should university graduates continue to enter the labour market at an increasing rate and no adequate employment opportunities be created, the rate of unemployed university graduates may increase to 5 per cent in 1975.[10]

The survey, among other things, also reveals that there were 1,200 unemployed university graduates in 1969 and the number increased a little more than twice, 2,650, in 1972. (See Table 5, Table 6, Table 7, and Table 8).

The problem of university graduate unemployment may not be too serious in the near future if the graduates are willing to accept jobs that require lower qualifications than they possess. The employment situation for the whole society will be in terms of underemployment and misemployment in high-levels which in turn will automatically cause the graduates at the lower levels to suffer more serious unemployment.

In 1974 the Bureau of the State Universities conducted a preliminary survey of university graduate employment on the 1973 graduates from eight institutions. It was found that out of 7,770 new graduates, 5,000 or 64 per cent were already employed within four months after graduation; 10 per cent were studying for a higher degree or undergoing non-degree training for a specific career; 2.4 per cent had not looked for any jobs; and 24.7 per cent failed to find suitable employment.

According to this survey, 60 per cent of all the employed had found employment in the government sector. It also revealed that at the time the survey was conducted, 34 per cent of the graduates in agriculture were not employed. This is the highest number of unemployed among all fields of study. Tentative explanations could be given here:

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[10] Nikom Chandravithun, *op. cit.*, p. 12.

TABLE 5

NUMBER OF UNEMPLOYED PERSONS AT UNIVERSITY LEVEL, 1969 AND 1972

	1969			1972		
	Total	Employed	Not Employed*	Total	Employed	Not Employed*
Whole Kingdom						
Academic	900	100	800	1,880	190	1,690
Vocational	300	—	300	770	190	580
Total	1,200	100	1,100	2,650	380	2,270
Municipal Areas						
Academic	900	100	800	1,880	190	1,690
Vocational	300	—	300	770	190	580
Total	1,200	100	1,100	2,650	380	2,270
Bangkok-Thonburi						
Academic	800	100	700	1,670	190	1,480
Vocational	300	—	300	540	60	480
Total	1,100	100	1,000	2,210	250	1,960

81

**Not Employed* means persons with no previous work experience.

Sources: Labour Force Survey, National Statistical Office, Office of the Prime Minister, Bangkok, Thailand.

TABLE 6

NUMBER OF UNIVERSITY GRADUATES
BY INDUSTRY, 1969 AND 1972

INDUSTRY	1969		1972	
	Academic	Vocational	Academic	Vocational
Agriculture, Forestry, Hunting and Fishery	—	—	60	—
Mining and Quarrying	100	—	710	70
Manufacturing	2,200	700	8,010	1,140
Construction, Repair and Demolition	2,300	700	1,310	360
Electricity, Gas, Water and Sanitary Services	1,500	1,200	1,560	1,140
Commerce	7,200	1,100	12,330	3,190
Transport, Storage and Communication	1,500	400	1,900	990
Services	34,800	5,500	35,550	13,260
Total	49,600	9,600	61,430	20,150

Sources: Labour Force Survey, National Statistical Office, Office of the Prime Minister, Bangkok, Thailand.

1 For the graduates who were applying for government jobs at the time when the survey was conducted, i.e., July of the year, the various government agencies had only a few positions left and new positions for the coming fiscal year would only be approved in October. Some of the graduates could be on a waiting list until then.

2 Although the Office of National Social and Economic Development Planning Board[11] has estimated higher demand for high-level manpower in agricultural development of the country, and the universities accordingly produced a large number of graduates in the field, the annual appropriations of budget for new positions in agricultural development agencies were relatively small. The supply thus was in excess of the authorized demand.

[11]Office of the National Economic and Social Development Board, *The Third National Economic and Social Development Plan, 1971-76*, Table 5.

TABLE 7

NUMBER OF UNIVERSITY GRADUATES
BY OCCUPATION, 1969 AND 1972

Occupation	1969		1972	
	Academic	Vocational	Academic	Vocational
Professional, Technical and Related Workers	23,200	1,600	26,760	9,690
Administrative and Managerial Workers	14,800	3,100	18,850	3,510
Clerical Workers	1,500	800	4,470	3,300
Sales Workers	1,400	200	3,130	810
Farmers, Fishermen, Hunters, Forestry Workers and Miners	—	—	—	—
Workers in Transport and Communication	300	200	300	250
Craftsmen and Manufacturing Workers	500	1,600	430	2,070
Services Workers	2,500	500	2,480	550
Total	44,200	8,000	56,420	20,180

Sources: Labour Force Survey, National Statistical Office, Office of the Prime Minister, Bangkok, Thailand.

3 As the survey did not reveal the intention of the graduates in employment, it could be that a certain number of agriculture graduates did not want to engage themselves in the agricultural field or low-income government service and thus were waiting for better paid and more suitable jobs in some private sector.

2.3 Duration of Employment Seeking

University graduates often apply for jobs at several places at a time so as to select jobs that are more satisfying and suitable to their needs. Most spend from 1 to 3 months before securing employment. Many however, spend more than 6 months. The reasons for such delay may be due to the care they take to insure that they will find the most suitable and satisfying jobs available. For some of them, too, there is no urgent need to find immediate employment.

TABLE 8

HIGHER LEVEL MANPOWER DEMANDS OF THE

PUBLIC SECTOR AND SUPPLY OF GRADUATES BY FIELD OF STUDY

Field of Study	Number of Requirements 1972	Number of Graduates	
		Local	Overseas
Engineering	1,106	2,564	23
Sciences	264	733	13
Medical Sciences	1,447	1,935	10
Social Sciences	1,380	4,988	41
Humanities	44	808	9
Agriculture	445	1,297	9
Fine Arts	83	829	5
Law	112	1,577	3
Education	44	12,166	9
Military and Police	—	349	1
Total	4,927	27,246	123

Sources: Research Section, Standard and Development Division, Office of the Civil Service Commission, Bangkok, Thailand.

Graduates in social sciences spend more time in securing employment than others. This is believed to be due to the high number of graduates in this field and the fact the demand for such graduates is very low.

3. Impact of Higher Education on Social Development

3.1. General Background

Teaching, research, and service to community are considered the three functional components of the university, whereas social, economic, and political factors constitute the life of society at large. University education, besides the well-known functions of teaching and developing the desired characteristics of citizenship in the students, performs its unique role in research. The latter distinguishes higher education from the primary and secondary schools. The univer-

sity not only conducts research work for the benefit of knowledge expansion, but also equips the individual with the research skills needed to make advancement in his chosen profession and career.

In Thailand, transmitting and preserving traditions of the past is not regarded as the principal function of the university. The transmission of traditional culture has been the responsibility of the Buddhist Church, the royal families, and recently, the Ministry of Education in its primary and secondary school systems. Higher Education in Thailand, as mentioned elsewhere in this paper, came about out of the needs for modernization of the government, as first conceived by King Rama V. The higher education system, then, was designed specifically for, to put it in present-day terms, national development — i.e., to develop administrative effectiveness, and later, to promote better health services and to improve the legal system.

As already mentioned earlier, growth and changes in the Thai higher education system are manifested in the size of enrolments, the fields of studies open for study, the variety of curricula and courses, the increased number of faculty members, departments, faculties, universities and the expanded budget.

3.2 Broader Access to Higher Education

A higher percentage of the Thai population, especially those in lower socio-economic classes, have had access to higher education during the last decade than in the past. The higher learning institutions are no longer reserved for the select few or the elite. Consequently, the qualifications of employed manpower in every sector of the society has greatly improved. This is especially so in government circles. Never before in the history of Thailand have there been such a large number of doctorates in the various departments in the Ministries. Formerly, one would find those who had obtained advanced degree only in institutions of higher learning.

3.3 Increased Social and Political Consciousness and Activities of Graduates

Broader core curricula, being one of the changed aspects in Thai higher education, have widened the students' perspective and prepared the university graduates for their social and political roles. They have become more intellectually sophisticated and interested in cultural preservation and enrichment as well as social ethics. The new generations are more conscious of political situations and of the necessity of participating in civic activities. Social awareness and political consciousness derived from such new concepts in curriculum development in line with modern philosophies of education have increased the graduates' sense of social responsibility. Such effects are also felt among the university teachers whose background training has been narrowly specialized.

Student-teacher volunteer movements in community development are an example of the university's active participation in civic affairs. Public speeches, lectures, and discussions conducted by the students and teachers within and without the campus have attested to the new role of higher education resulting from its recent growth and change.

Changes in philosophies of higher education taking place in Thailand during the past decade have underlined its service to the public. The change in the student's attitudes toward society, through implementation of the new policies, has also brought about their parents' interest in community and world affairs.

The student movements have played key roles in struggles for social, political, and economic justice. For example, the National Student Centre in Thailand, created in 1970, brought about the overthrow of the tyrannical military regime in October 1973. This new student activism evidently is accounted for in part by the growth and change of the country's higher education system.

4. Impact of Higher Education on Economic Development

Several studies have indicated valuable contributions by higher education to the growth and development of society. Very few, if any, have statistically reported how higher education plays its part in different sectors of the national economy. There should be some data that would indicate the change in the number and educational qualifications of employees engaged in various levels of business, industry, and public service over a period of 20-30 years. This is much easier to say than to do. Practically no agency, especially in the private sector, would have accumulated such long-range data on records of their personnel. Even if they had such accounts, they would not have them analyzed in a systematic manner and ready for dissemination. It is difficult for them to conceive any benefit derived from this kind of statistics for their own interest. Unless certain government agencies concerned requested, such data would not be available for a study of the relationship between higher education and economic development.

Thailand, like most of the less developed countries in the world, is not sophisticated in management and administration. The Thai society is far from being individualistic. As only a small portion of the population is university-trained, research and self-evaluation are not appreciated. Political traditions, based on Brahmanistic-Buddhistic world views, have bound the Thais to depend entirely on their national leaders, to have complete faith in the gods as represented by the kings, and to believe that the present and future courses have already been charted by the past 'korma', or one's activities in the former life. Even the highly educated are subconsciously bound by these traditions, which very often are observed in their way of thinking and in their decision-making.

The Thais still lack historical perspective. They do not perceive clear relationships between the past and the present in many aspects of societal life. Historical records are sporadic, inconsistent, and in most cases unsystematically compiled. Being an illiterate society until less than a thousand years ago, not much has been historically recorded by the Thais themselves about their activities, except those performed by the kings. Prior to the establishment of public education in late 19th century, the commoners had rarely produced any written records of what was going on in the society at large and at the grassroots. The people seemed to live on a day-by-day basis, thinking nothing much about their future, leaving everything either to the kings or to Mother Nature, and taking life easily and philosophically. Without a study of the past, man has no idea about the future and cannot plan for it. Without both conditions men's society would be very static and not likely to be improved.

Higher education, if properly planned and executed, can create new aspirations and can widen horizons for both the individuals and their countries. It clearly has both direct and indirect effects on economic development because of its influence on the structure of the society — notably by promoting social and occupational mobility. It affects the climate for investments and contributes to the productivity of workers.

Higher education, in order to effectively play its roles in economic development, must be facilitated by stable social and political conditions and atmospheres. In less developed countries, favourable conditions can prevail only by government initiatives. The people need intelligent, sincere, and uncorrupt leaders to lead them from illiteracy to intellectuality, from selfish individualism to responsible collectivism, from leader-dependence to self-reliance, and from nationalistic isolation to international interrelation. Higher education should be an integral part of the whole social life. Its functions must be understood, recognized, and accepted by the government and the people. Higher Education, therefore, must be a national policy set up by the government to perform certain functions. These functions in turn should be complementary to other policies — social, economic, and political, of the country. Sociologically, education has a primary role in man-making and nation-building. The society — the government and the people — must clearly define the characteristics of the kind of men and society they desire to have. The values that they expect the university to teach must be the same as those they uphold and practise in their daily life. If, for instance, the government and the people expect the university to instill in the minds of the young the virtue of honesty, they themselves must be honest. Likewise, if the university is expectd to produce persons with initiative and creativity, the society must not only avoid doing any activities that might hinder local invention and innovation, but must also seek ways and means to provide opportunities for such initiatives and creativity to flourish.

5. Investment in Higher Education and the Country's Economic Growth

The relationship between investment in higher education as expressed in terms of national budget allocated to the university education system and the country's economic growth in terms of gross domestic product from 1967 to 1973 is quite high ($r = 0.826$) (Table 9). The increase in the national budget appropriated to higher education (9 per cent) is slightly higher than that of the GDP (8 per cent) over the same period of time. When the two components are expressed in terms of cost per student and GDP per capita respectively, the increase in the former is much lower (3 per cent against 14 per cent).

From 1967-73, the national appropriation to the university education system of Thailand was, on the average, 15 per cent of the total budget for education at all levels. This was only about 2.5 per cent of the total national budget, and approximately 0.2 per cent of the GDP.

The increase in the number of university graduates with first degrees from government institutions, however, is quite high, i.e., approximately 18 per cent over the same period. The number of the graduates, on the other hand, is relatively small when compared with the labour force with lower levels of education. In 1971 the population census for the whole country was reported to be 38.8 million. The number of persons who had obtained a university education was approximately one million, or about 0.5 per cent.

Under the social and economic conditions in a country like Thailand, it is not probable that such a small number of highly educated persons would make themselves felt in terms of national economic change.

The relationship between the investment in higher education and the country's economic growth, even though quite high as already demonstrated, does not prove by itself that the latter is caused by the former. No one, nevertheless, would deny the positive impact of university education on Thai society.

TABLE 9

INVESTMENT IN HIGHER EDUCATION
AND THE COUNTRY'S ECONOMIC GROWTH, 1967-1973

Year	Allocation to Universities (Million Baht)	Increase (Percentage)	Gross Domestic Product (Million Baht)	Increase (Percentage)
1967	473.3	15.97	94,191.7	—
1968	602.4	27.27	103,214.5	9.57
1969	605.6	0.53	117,781.2	8.29
1970	699.5	13.67	121,975.6	9.11
1971	778.1	13.01	131,025.7	7.41
1972	747.3	3.96	140,197.5	7.00
1973	874.3	16.99	150,011.3	7.00

Sources: Education Reports, Office of Educational Planning, Ministry of Education, 1967-1973

IV. TOWARD A MORE RELEVANT DEVELOPMENT OF HIGHER EDUCATION

1. Higher Education in the Nation's Economic and Social Development Planning

1.1 Past Experiences

The role of the university in the formulation of national economic and social development plans in Thailand has been very limited. This is mainly due to narrow-mindedness on the part of the government agencies responsible for the development planning. Like most of the Ministries and Departments of the government, the agencies are self-sufficient and independent in carrying out their assigned affairs. The rules and regulations regarding the work relationships with other Departments outside their own Ministries have tended to impede or discourage any cooperative efforts.

In formulating the Third National Economic and Social Development Plan, however, personnel from 14 universities were involved. Two of those assisted in agricultural development planning, two in social development, and 10 in educational aspects. A few professors were engaged in evaluating the implementation of the previous plans.

In a broader sense of development plan formulation, the involvement of the university has been scattered among various projects. Upon the takeover of the military regime in 1971, some 20 university personnel from many institutions were assigned to many committees in the National Executive Council which was then acting as an interim Cabinet set up by the Revolutionary Party. None of these committees were involved in the formulation of specific development projects. Yet all were somehow or other engaged in formulating certain policies or reorganizing the administrative structure in order to facilitate the implementation of the Third Plan, which is now in effect. The Committees were involved in many different fields, such as agricultural and rural development, public utilities, housing, administrative systems at the national and local levels, educational development and health, etc. These university professors worked closely with the personnel in the agencies directly responsible for the projects on a part-time basis. They retained their teaching load without any monetary compensation for these extra duties. The contributions of these professors were made in the improvement of the rules and regulations as well as in policies concerning the various aspects of the development implementation.

The participation of the university in national affairs that have significant impact on the nation's development can be further observed in the appointment of the members to the National Legislative Assembly and the Constitution Drafting Committee in December 1973. Of 299 members of the Assembly, 10 were university staff and 268 university graduates. Among the 21 of the Constitution Drafting Committees, four were university teachers and all university graduates.

Regarding the university's contributions to national economic and social development planning and implementation process, Dr. Saeng Sanguanruang[12] has summarized his observations in terms of such traditional functions of the university besides teaching, as training, research, and consulting.

> Looking even more broadly and in a more significant sense, the university as an economic institution has been more actively involved in the development process than previously indicated. We can take up the contributions of the universities to national development planning by discussing the traditional roles of the academic community, namely, training, research, and consultancy.
>
> I. **Training**
>
> Apart from preparing grduates to fulfil manpower requirements as previously discussed, the universities in Thailand have been giving training to people directly involved in the formulation and implementation of the development plans. The creation of the Institute of Public Administration (IPA) in Thammasat University in 1958 was one of the earlier attempts to give the students who were largely government officials, exposure to basic public administrative principles and techniques needed for carrying out government activities. The whole concept of creating the National Institute of Development Administration, which is an outgrowth of the IPA, is orientated to prepare development administrators both in the public and the private sectors. NIDA offers graduate education in four fields: Public Administration, Development Economics, Business Administration and Applied Statistics; in addition, it has a Research Centre, a

[12] Saeng Sanguanruang, *Development Planning in Thailand: The Role of the University*, RIHED, Singapore, 1973, pp. 79-87.

Training Centre and a Development Document Centre. The Programme in Development Economics offers, among others, courses in general theory of economic development, economic planning and project evaluation, while the Programme in Public Administration covers many areas of development administration including performance evaluation. The School of Applied Statistics, apart from offering courses in quantitative techniques extremely useful for development planning such as programming techniques, also included in its curriculum courses in such applied fields as operations research and demographic analysis. The School of Business Administration designs its programme to train junior managers for the private sectors.

In addition to training given to Master's degree candidates, NIDA has been conducting training programmes for government and private agencies either by its Training Centre or by the various Schools. Some of these training programmes are offered on a regular basis while others are on an *ad hoc* basis as demanded by the requesting agencies. Examples of the regular training Programmes which should be cited, the Executive Development Programmes given each year to the special grade government officials (mostly provincial governors) by the Training Centre and the Programme in Economic Development for middle-level government officials concerned with the development planning and implementation conducted by the School of Development Economics.[13] Recently, the School of Business Administration has conducted the Junior Executive Development Programme for business managers in cooperation with the Thailand Management Association.

As a result of the reorganization of the administrative system recently instituted by the National Executive Council, which set up the planning and policy offices in practically all government departments, the need for planning capability on the part of the staff of these planning units has become more evident and NIDA has been requested by the NEC to conduct training programmes on planning for the government planning personnel at all levels — a gigantic task compared with the training programmes which NIDA has been giving in the past. NIDA is currently at the planning stage to map out this new assignment in terms of the requirements, resource capability, possible foreign assistance, and the scope and substance of the programmes to be offered.

II. **Research**

An important role of the university in the development process is to increase knowledge which has bearing on the development planning through research. Ideally the knowledge obtained from research activities should be of a practical nature and should be made available to the planners in due time, and it should be of value to the formulation of development policies and action programmes. The ideal, of course, is difficult to achieve, especially when there is a lack of coordinating efforts to set up a priority list specifying the research areas which have the most relevance to the development problems of the country, and when research studies are not accessible or accepted by the potential users. The end result is that the scarce manpower is largely engaged in

[13]There was also a training programme in 1968 on Project Evaluation offered jointly by the NEDB, NIDA and Thammasat University.

producing something irrelevant, or something which gets shelved the minute it is published.

In the 1971 academic year, of which the latest data are available, some 915 faculty members or 17 per cent of the total full-time staff of all universities and institutions of higher learning were engaged in research on some 750 research topics.[14] Of these, 168 research workers were from Kasetsart University working on 85 research topics. The research problems under study involved such technical problems of agriculture as effects of soil and fertiiizers on yield improvement, breeding of fish, forestry research, agricultural economic research, labour utilization in rural areas, etc. In the same year, 195 faculty members of Chulalongkorn University were engaged in conducting research on some 130 research studies, ranging from pathology to politics, while 278 faculty members of Mahidol University were involved in some 345 research studies in the medical field. The faculty members of other universities also undertook research projects of some kind. The number of faculty members involved in research, the number of research topics and the amount of research funds for the 1971 academic year are shown in Table 10.

TABLE 10

FACULTY OF RESEARCH, 1971

Institution	Number of Faculty Members Involved	Number of Research Topics	Amount of Funds (baht)
Kasetsart University	168	85	3,890,447
Khon Kaen University	10	20	393,000
Chulalongkorn University	195	130	1,103,745
Chiengmai University	114	86	8,314,300
Thammasat University	20	5	167,720
Mahidol University	278	345	7,436,737
Songkhanakarin University	35	7	110,000
Silpakorn University	10	8	88,600
NIDA	69	59	603,585
Colleges of Education at Prasarnmit	16	6	921,200
Total	915	751	23,029,334

Source: Office of the National Education Council, 1971 Report on Institutions of Higher Learning, Table 12.

[14] Office of the National Education Council, *Educational Report, Institutions of Higher Education, Thailand 1970*, Table 12, p. 159.

The research funds were financed both by the universities and other agencies, domestic as well as international. Some universities have research promotion funds which are granted to applicants upon approval by the research committees. It is difficult to evaluate the utility of the research efforts financed by the various university research funds, but two general observations may be made. First, in one case the university research funds have been set up primarily for welfare purposes and not primarily for producing research output. A major original objective of establishing a research fund at NIDA was to supplement the regular income of faculty members in the form of 25 per cent bonus if their research projects are approved by the Research Promotion Committee. The faculty members are entitled to draw from the Institute's research funds an extra salary to the amount of 25 per cent of their basic salaries as long as their research projects are still outstanding. The bonus is terminated when the deadline is due. The effectiveness of this kind of research promotion system depends crucially on the screening and follow-up process, as there is a tendency for applicants to overestimate the length required to undertake the research projects and to cram up the research activities during the short time before the due date. Under these circumstances, it is difficult to expect a good quality research output. This observation by no means implies that no good quality research has been produced, but on the whole it is natural to expect sub-standard research work from this kind of incentive system. The second observation to be made is that there does not seem to be coordinating effort in assigning priorities to the research problem areas to make the research projects relevant to development planning and implementation. The coordinating work should not be limited to all universities but must involve the research using agencies as well.

Another major problem in connection with faculty research is the limited time availability of faculty members for research as a result of competing demands on their time resources. An example of a one week allocation of instructors of Chulalongkorn University is shown in Table 11.

As can be seen, more than 75 per cent of the total hours were devoted by faculty members to teaching, teaching preparation and student guidance, while only 13 per cent were taken up in research. The above figures do not reveal the allocation of earning hours or the hours on weekends, but it is a common practice for a large number of faculty members to take up extra teaching at evening schools in order to supplement their regular income. Research does not necessarily render remunerative benefits and requires much self-discipline which not all the faculty members are prepared to accept.

There are many areas where fruitful research could be carried out to provide the information needed by the planners. Three areas have been identified by a leading planner.[15] The first involves the identification and specification of economic relationships and changes in technology such as aggregates as well as sectoral capital-labour ratios, substitutability

[15]Thalerng Tnamrongnawasawat, The Need of Development Planning Agencies for University Academic Services, paper presented to the Seminar on Cooperation between the Universities and the Government, jointly organized by the Office of the National Education Council and RIHED, at Bangsaen, March 9-11, 1972. This paper also appears in *The Journal of the National Education Council* April 1972, pp. 18-23.

TABLE 11

TIME ALLOCATION OF CHULALONGKORN UNIVERSITY INSTRUCTORS, 1970

Activities	Hours	Percentage
Teaching	10.7	28.2
Teaching preparation	12.7	33.4
Student consulting and guidance	5.6	14.7
Administrative work	4.0	10.5
Research	5.0	13.2
Total Hours in One Week	38.0	100.0

Source: Chattip Nartsupa, *et. al.*, 'Problem in Faculty Research in Chulalongkorn University', in *A Seminar on Academic Crisis in Chulalongkorn University, 17-18 January 1970*, Chulalongkorn University Faculty Club, Bangkok, 1970, p. 96, in Thai.

between various factors of production and discovery of new types of raw materials. The second problem area has to do with socio-economic characteristics of the population, including their social behaviour and motivation. The construction and simulation of the development models of the country should constitute the third area of useful research by university staff members.[16]

Other areas of fruitful research which should be undertaken jointly by the university personnel and the staff of the concerned operating agencies are the study of foreign market research, the tariff structures of important trading blocks, pre-investment feasibility studies in all fields and the regional resource endowments and potentials.

Some good works on demographic aspects of planning have been made by the Institute of Population Studies, an autonomous research unit attached to Chulalongkorn University staffed entirely by the university personnel and assisted by foreign as well as local specialists. Apart from carrying out research, the Institute also provides consultative services to government agencies concerned with population matters and also offer graduate programmes in varied areas of demography. As of 1971, the Institute has produced six publications, and 44 reports, articles and

[16] *Ibid.* At present, two faculty members, one from the Faculty of Economics, Chulalongkorn University, and the other from the Faculty of Economics and Business Administration, Kasetsart University, are working on a comprehensive econometric model for the development of the Thai Economy, financed by a grant from USAID. Also, a number of faculty members of Chulalongkorn, largely from the Faculty of Engineering, have been conducting studies on the urban problems of the Bangkok Metropolis.

theses on population studies apart from organizing seminars on a wide range of subjects of demography [17]

III. Faculty Consulting

Apart from training and research activities, university faculty members are also engaged in consulting work. Faculty consulting in development planning has been quite limited but is increasing as a result of the recent establishment of planning units in operating ministries. A NIDA faculty member has been giving consulting services in the area of regional planning for quite some time, but now a large number of NIDA staff are assisting in various planning activities launched by the Ministry of Interior and the newly-founded Bangkok Metropolis government. The arrangement is still largely informal: faculty members, through personal contacts, are requested to sit in working groups and committees on different aspects of planning and, in some cases, to actively get involved in actual planning work on a part-time basis. So far the services are given without any sort of compensation but arrangements are being made to provide the outside personnel with normal compensation.

A comment is in order on the effectiveness of faculty consulting planning as it is currently practised. Due to time limitations and a load of other commitments on the part of the faculty members, it is probably safe to say the provision of consulting services on an *ad hoc* basis would be somewhat short of the ideal. Planning requires the assessment of the present situation, the problems faced by the operating personnel, the potentials for development and the areas in which limited resources can be put to most effective use. The study of all these facets presupposes a certain minimum of time which the present arrangements do not make available.

2. Conclusions and Recommendations

2.1 Conclusions

In the case of Thailand, in spite of the imperfect data on graduate employment, general observations indicate that there has been no serious problem of university graduate employment in the labour market. However, there is some evidence of increasing unemployment and underemployment of university graduates, not only in the fields of social sciences, humanities, education, business administration, and accountancy, but also in forestry and agriculture.

The development of higher education in Thailand has, from the beginning, undoubtedly contributed in great measure to the economic growth and development of the country, as measured in terms of investment in the educational institutions, number of graduates in the labour market, and the GNP.

The social and political situation of the country heretofore, however, has not encouraged investment in business and industry in private and public sectors to a large enough extent to ensure maximum use of university-trained manpower. Over-importation of consumer goods instead of encouragement of local invention and production has created employment problems among the fast growing population, including university graduates.

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[17] From a brochure of the Institute of Population Studies, Chulalongkorn University, 1972.

2.2 Recommendations

(a) More Data Needed

The data on the impact of higher education on Thai society are far from complete. Records are needed not only concerning the number of graduates from the various institutions at a given time, but also of their employment in various occupations as well as their job performances. Changes in educational qualifications of individuals employed at certain positions in certain occupations in relation to university education and training should be determined. Employment profiles of the university graduates and their respective job description should be studied.

(b) More Realistic Planning Required

Social and economic development needs must be accurately determined and projected if education and training for high-level manpower is to be effectively and efficiently implemented. Social and political factors must be taken into consideration if economic development is to be achieved. Effective planning for development requires constant systematic evaluation of previous and present operations.

(c) Relationships Between the Various Levels of Education

In order that higher education will more effectively meet the needs of the national development processes, education at primary and secondary levels must be conducted with high degree of effectiveness. Teaching and learning at those levels must stress creative thinking and problem solving skills. Education for life must be the central theme for teaching, both in curricular and extra-curricular activities.

(d) Prerequisites for Development

As should be well understood by now, development is a continuous process involving all aspects of social life and institutions, namely, religion, government, health, education, and economy, which are integral and interdependent.

The political atmosphere must be appropriate and conducive to constructive and productive investment. Public and private sectors must cooperate to achieve national security and prosperity for the whole society. Law and order must be upheld with self-discipline. Equality in education and occupational opportunities must be provided to everyone to encourage individual initiative and creativity. Decentralization of government administration and taxing power to local provinces and communities must be practised so as to stimulate investment in the various parts of the country.

With the present rate of university development more graduates will be produced. Faced with appropriate political and economic situations, they will create more jobs for themselves and other labour forces.

The government must improve its services through more effective and efficient systems of administration. Salaries and/or welfare benefits for civil servants, including university teachers, must be properly adjusted in accordance with the country's economic situation. Better salary scales and more positions in schools and other service agencies must be provided so that university graduates can make full use of their training and skills for national development according to their interests and aptitudes. The government administration should be conducted with

the same principles as business organizations, and the salaries of civil servants should be regarded as an investment. The people are clientele, customers, or patrons who are entitled to the best possible service from the government.

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